

Drystar 4500

Reference manual



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Table of contents

Chapter 1: Introducing the Drystar 4500	5
Drystar 4500 features	6
Safety precautions	9
Security precautions	12
Safety compliance	13
Privacy and security	15
Operating modes	16
Control modes (local and remote)	18
The user interface	19
Switching on the Drystar 4500	26
Switching off the Drystar 4500	28
Chapter 2: Basic operation (operator mode)	29
Overview of operator functions	30
Managing the print queue	31
Assigning emergency priority	33
Deleting print jobs	34
About Drystar 4500 consumables	36
Loading films	38
Chapter 3: Advanced operation (key-operator mode)	45
Overview of key-operator functions	46
Viewing printer information	49
Changing the configuration settings	56
Printing images	93
Saving the configuration settings	99
Restoring the configuration settings	101
Performing the calibration procedures	105
Installation	113
Quality Control	134
Chapter 4: Controlling the Drystar 4500 via the browser	147
Features	148
Setup	149
Setting up the connection	150

Starting the remote session.....	155
Chapter 5: System description.....	159
Main components	160
Functional description	161
Changing the film format of the lower tray	162
Drystar 4500 network configuration	165
Transport after installation	166
Chapter 6: Preventive maintenance	167
Preventive maintenance schedule.....	168
Cleaning the exterior.....	169
Cleaning the cooling air flow holes.....	170
Chapter 7: Troubleshooting.....	171
Troubleshooting checklists	172
The Drystar 4500 does not print	174
Clearing of film jams	177
Start-up errors.....	189
Maintaining image quality and resolving image quality problems.....	191
Warning messages.....	194
Appendix A: Equipment information sheet.....	195
Specifications	196
Viewing the System info area on a film.....	199
Options and accessories	200
Connectivity.....	201
Appendix B: Drystar media density response data	203
Drystar DT 1 B	204
Drystar DT 1 C New	205
Appendix C: Quality Control Charts	207
Appendix D: Index.....	213
Index.....	214

Introducing the Drystar 4500

This chapter introduces the Drystar 4500 to the user and draws attention to important safety precautions.

- ☐ [Drystar 4500 features](#)
- ☐ [Safety precautions](#)
- ☐ [Security precautions](#)
- ☐ [Safety compliance](#)
- ☐ [Privacy and security](#)
- ☐ [Operating modes](#)
- ☐ [Control modes \(local and remote\)](#)
- ☐ [The user interface](#)
- ☐ [Switching on the Drystar 4500](#)
- ☐ [Switching off the Drystar 4500](#)

Drystar 4500 features

The Drystar 4500 is a **dry digital printer** for producing diagnostic black and white hard copies. It can use both 8x10" and 10x12" blue-based and clear-based film and offers crisp, dense grayscale images.



The Drystar 4500 is a Dicom-only network printer.



The Drystar 4500 has limited support for the Helios protocol. Ask your AGFA representative for more details.

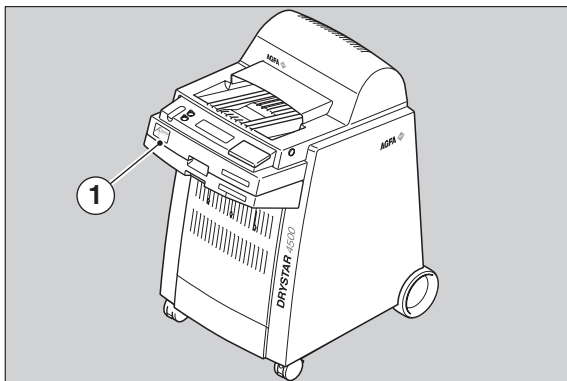
The Drystar 4500 offers the following features:

- Dry technology for printing diagnostic quality hard copies in full daylight offers important advantages: no chemistry, no wet processing, simple cleaning procedures, no time-consuming adjustments, no darkroom and no chemical disposal costs. The consumables can be loaded in full daylight.
- With its compact design, the Drystar 4500 needs little work space and allows easy customer access. Maintenance and service activities are reduced to the minimum.
- The direct thermal printing system provides grayscale images with laser-like quality: 508 dots per inch resolution, each pixel with a 12 bit contrast resolution and an optical density up to 3.1 (if an X-Rite 310 densitometer is used).
- The built-in image spooling on hard disk assures a high throughput. Printing time is kept to a minimum.
- Both 8x10" and 10x12" films can be used "on-line". The upper tray only uses 8x10" films, but the setting for the lower input tray can be adjusted for either 8x10" or 10x12" films.

- Integrated A#sharp technology: A#sharp is a technology that enhances image sharpness for the Drystar 4500. An A#sharp label on the upper tray shows that the imager has been upgraded with this technology.



The A#sharp technology is present in Software version 3.00 and higher.



1	A#Sharp label
----------	----------------------

Network features

- The modular design offers optimal application to your specific networking requirements.

In a network configuration, the Drystar 4500 is fully compatible with Agfa's diagnostic imaging systems, including the ADC Compact and ADC Quality System software, the Paxport and the entire line of Impax Review Systems, Storage Stations and Transmitting Stations.

- The functionality of the Drystar 4500 is completely controlled via the network.
- You can control the working of the Drystar 4500 via the local keypad or via a remote PC featuring a browser page functionality.

Customizable features

- Film size in lower input tray.

The key-operator can adjust the film size setting for the lower input tray (either 8x10" or 10x12"). Refer to '[Changing the film format of the lower tray](#)' on page 162.

- Consumables.

The Drystar 4500 can handle Drystar DT 1 B and Drystar DT 1 C consumables, both in 8x10" and in 10x12" format.

Optional features

- Postscript connectivity.

A Postscript software module can be installed as an option. No hardware modifications are required prior to the installation of the Postscript module.

Safety precautions



The device must only be operated according to its specifications and its intended use. Any operation not corresponding to the specifications or intended use may result in hazards, which in turn may lead to serious injuries or fatal accidents (for example electric shocks). AGFA positively will not assume any liability in these cases.



It is advisable to switch off the Drystar 4500 if you do not have to use it for a period longer than one day.

When operating or maintaining the Drystar 4500, always observe the following safety guidelines:

- Have electrical or mechanical defects repaired by skilled personnel only!
- Do not override or disconnect the integrated safety features.
- Ventilation openings may not be covered.
- Always switch off the Drystar 4500 and disconnect the power cord from the outlet before carrying out any maintenance work.



Film jam removal or Cleaning the printer head can be done without switching the power off. Nevertheless, care should be taken and the following instructions should be respected:

Always take into account the markings provided on the inside and outside of the printer. A brief overview of these markings and their meaning is given below.










Safety warning, indicating that the Drystar 4500 manuals should be consulted before making any connections to other equipment. The use of accessory equipment not complying with the equivalent safety requirements of this printer may lead to a reduced level of safety of the resulting system. Consideration relating to the choice of accessory equipment shall include:

- Use of the accessory equipment in the patient vicinity,
- Evidence that the safety certification of the accessory equipment has been performed in accordance with the appropriate IEC 601-1 and IEC 601-1-1 harmonized national standard.

In addition all configurations must comply with the medical electrical systems standard IEC 601-1-1. The party that makes the connections acts as system configurator and is responsible for complying with the systems standard.

If required contact your local service organization.

	In order to reduce the risk of electric shock, do not remove any covers.
	Type B equipment: Indicates that the Drystar 4500 complies with the limits for type B equipment.
	Supplementary protective earth connector: Provides a connection between the Drystar 4500 and the potential equalization busbar of the electrical system as found in medical environments. This plug should never be unplugged before the power is turned off and the power plug has been removed.
	Intergrounding connector: Provides a connection between the printer and other equipment which might exhibit minor ground potential differences. These differences may degrade the quality of communication between different equipment. Never remove connections to this terminal.
	Protective earth (ground): Provides a connection between the printer and the protective earth of the mains. Do not remove this connection, because this will have a negative influence on the leakage current.
	Power/Reset Button (Standby switch) Note that the power cord has to be disconnected from the wall outlet in order to disconnect the unit entirely from the mains.
	Precautions for use in USA only: Make sure that the circuit is single-phase center-tapped, if the printer is connected to a 240 V/60 Hz source instead of a 120 V/60 Hz source.

Transport after installation

Before moving the printer, always switch off the machine. The user has to be very cautious concerning stability, when moving the printer. When doing this, he has to take into account the condition and the structure of the subsoil, obstructions and slopes. The appliance can only be transported with all covers closed. The appliance may not be transported continuously from one location to the other.



To prevent injuries, lock the brakes when the Drystar 4500 is in place at the right location.

Waste disposal and environmental regulations

In most countries Drystar film is considered industrial waste and consequently it is not allowed to dispose of it as household waste. Please consult your local waste disposal regulations. Agfa recommends to have waste Drystar film hauled away by a licensed company.

After its life span, do not dispose of the Drystar 4500 without consideration of local waste disposal regulations. Please consult your local service organization.

Security precautions



CAUTION (U.S.A. only): In accordance with U.S. Law, this device can only be sold to or ordered by a licensed physician.



Printed images should be treated as patient records and should only be viewed by authorized personnel.



It is good practice not to delete images from the modality, until they have been correctly printed.

Safety compliance

EMC issues

- **USA:** This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at its own expense.
If required, contact your local service organization.
- **Canada:** This class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.
- **EC:** This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Compliances

This equipment complies with:

- the Medical Devices Directive 93/42/EEC
- the standards UL2601-1 of Underwriters Laboratories
- CSA 22.2 No. 601.1-M90 of the Canadian Standards Association
- FDA 510k
- FDA Part 820 Good manufacturing Practice for Medical devices
- IEC 601-1 and IEC 601-1-1
- DOH
- VDE 0750 Teil 1 (12.91)
- TÜV

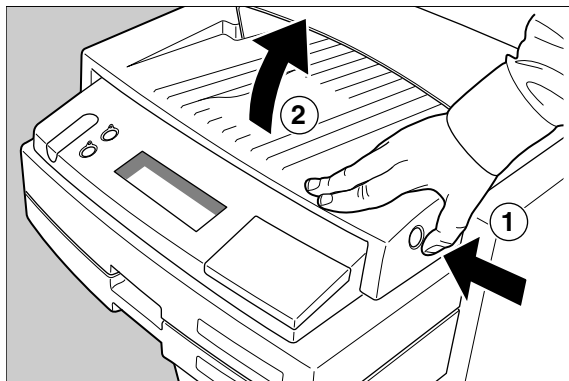
Labels



The Drystar 4500 carries the CE, TÜV, cULus and CCC labels.

To find the label location

- 1 Press the button [1] on the right hand side to open [2] the top cover.



- 2 The label is visible at the inside of the printer at the left.

Privacy and security

Within the healthcare industry, several standardization efforts are ongoing as a response to Privacy and Security legislation and regulations. The purpose of this standardization for hospitals and vendors is to enable information sharing, interoperability and to support the workflow of hospitals in a multiple vendor environment.

In order to allow hospitals to comply with HIPAA regulations (Health Insurance Portability and Accountability Act) and to meet the IHE standards (Integrated Healthcare Enterprise) some security features are included in the user interface of the Drystar 4500 (available via the web pages only: under 'Security tools'. Refer to '[Controlling the Drystar 4500 via the browser](#)' on page 147):

- **Product Authentication:** HIPAA supported products that communicate with DICOM use the Transport Layer Security (TLS) protocol. The TLS protocol uses public key certificates for client and server authentication (X.509).
- **Product Accountability:** HIPAA supported products require some level of user and system activity to be recorded. As a consequence of these actions, audit records are to be sent to and observed at an Audit Record Repository (ARR).
- **Product User Authentication:** 'User Authentication' of HIPAA products involves password protection for access to User, Key operator, Service Security/ Administrator and other user interfaces that allow access to protected health information (PHI). These interfaces include all user keypads, front panels displays and network connections.

The last two functions are available when access to the Administrator is granted (i.e. when the Administrator password has been entered correctly).

Operating modes

The Drystar 4500 can be operated in four modes: operator mode, key-operator mode, service mode and specialist mode.

Operator mode

The operator mode groups all basic functions which are aimed at radiographers without special technical skills:

- Producing diagnostic usable hard copies;
- Loading consumables;
- Ensuring normal operation of the printer.

All functions of the operator mode are described in both User and Reference manuals. Refer to '[Basic operation \(operator mode\)](#)' on page 29.

Key-operator mode

The key-operator mode groups advanced functions which are aimed at technically skilled operators such as X-ray operators, network managers and service and hospital technicians.

The key-operator mode can be accessed via the Key-operator key on the keypad and is menu-driven. The key-operator functions are described in the Reference manual only. Refer to '[Advanced operation \(key-operator mode\)](#)' on page 45.

Service mode

The service mode functions are reserved for trained service personnel. The service mode is password protected.

Specialist mode

The specialist mode functions are reserved for trained service personnel. The specialist mode is password protected.

Administrator mode

The Administrator mode functions are reserved for the System Administrator. The Administrator mode is password protected and is only accessible by browser via a remote PC. Refer to '[Privacy and security](#)' on page 15.

Control modes (local and remote)

You can control the working of the Drystar 4500 via the local keypad or via a remote PC.

The table below gives an overview of the operating modes you can access locally or via the remote PC.

Local	Password protected	Remote	Password protected
Operator mode	No	Operator mode	No
Key-operator mode	No	Key-operator mode	Yes
Service mode	Yes	Service mode	Yes
—	—	Specialist mode	Yes
—	—	Administrator mode	Yes

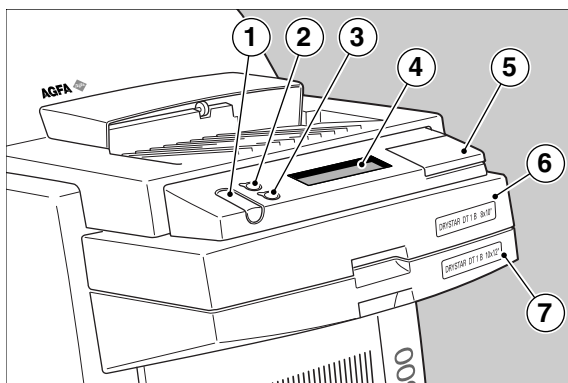
The manual describes the controlling of the Drystar 4500 via the keypad. When controlling the Drystar 4500 via a remote PC, the menus are structured in the same way. Refer to [‘Controlling the Drystar 4500 via the browser’](#) on page 147.

The user interface

The Drystar 4500 interfaces with the user via the following controls:

- Power/Reset button;
- Stop button;
- a keypad and a display;
- a status indicator LED;
- audio signals.

Overview of user interface controls:



1	Status indicator LED
2	Power/Reset button
3	Stop button
4	Display
5	Keypad cover
6	Film input tray (Upper input tray)
7	Film input tray (Lower input tray)



Never try to open the printer or a film input tray when the Drystar 4500 is busy printing a film. Always follow the instructions on the display!



The status indicator LED

At the left side of the display, a LED indicates the status of the Drystar 4500:

Color / Light		Status	Action
Green	Constant	Ready (standby)	Proceed
	Blinking	Busy or in key-operator mode	Wait
Red	Blinking	Warning status	Check the display for messages. Refer to <i>'Checking the status indicator LED'</i> on page 173.
	Constant	Error status	

The control buttons

Two control buttons have been provided:

	Stop button	<ul style="list-style-type: none">• To safely stop the printing process before accessing the input trays or opening the covers.
	Power/Reset button	<ul style="list-style-type: none">• To power on or off the printer.• To reset the printer.



Do NOT press the Power/Reset button without first pressing the Stop button when the Drystar 4500 is busy printing a film. Refer to *'Switching off the Drystar 4500'* on page 28.

Audio signals

The Drystar 4500 gives status information via beeps. The length of the beep indicates the response of the system to a key command.

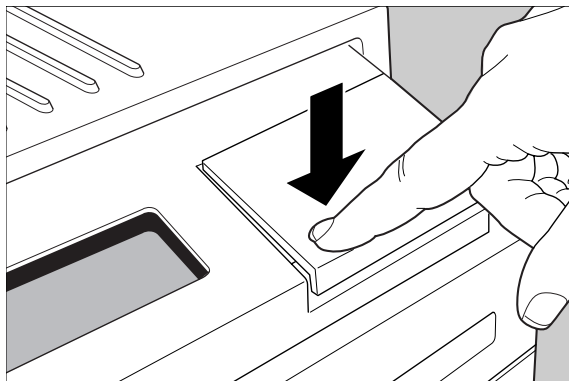
- A **short** beep means that Drystar 4500 has accepted the key command and is starting the operation.
- A **long** beep means that you have pressed a non-active key or that the Drystar 4500 has rejected the key command.



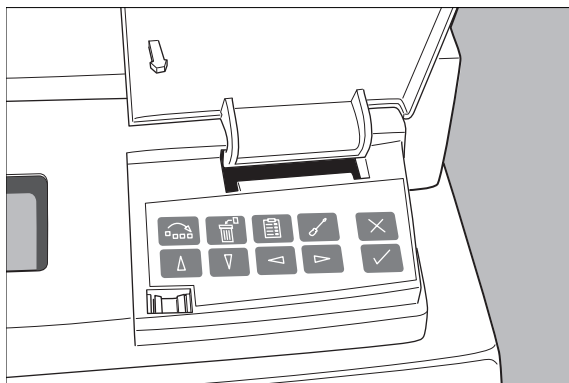
Certain conditions can cause an interval beep. An interval beep accompanies an error or warning message. Refer to [‘Troubleshooting checklists’](#) on page 172.

The keypad










To access the keypad, push the keypad cover in the lower left corner.




The keypad is located under the keypad cover.



The Drystar 4500 keypad features the following keys:

	Emergency key	To rearrange the print queue: emergency jobs can be placed at the top of the queue to be printed with priority. Refer to <i>'Assigning emergency priority'</i> on page 33.
	Delete key	To delete print jobs. Jobs that are deleted will not be printed. Refer to <i>'About Drystar 4500 consumables'</i> on page 36.
	Key-operator key	To access the advanced functions of the key-operator mode. Refer to <i>'Advanced operation (key-operator mode)'</i> on page 45.
	Service key	To access service-level functions. Reserved for trained service personnel.
	Escape key	To quit the current function or exit a menu without saving modifications.
	Confirm key	(In key-operator mode) <ul style="list-style-type: none"> • To select a menu. • To accept an entry in a menu.
	Up key	<ul style="list-style-type: none"> • To move the cursor to the previous entry field. • To scroll upwards. • To increment the number in a(n) (alpha)numerical entry field.
	Down key	<ul style="list-style-type: none"> • To move the cursor to the next entry field. • To scroll downwards. • To decrement the number in a(n) (alpha)numerical entry field.
	Left key	<ul style="list-style-type: none"> • To scroll backwards through multiple choices within a field. • To move the entry position in a(n) (alpha)numerical entry field from right to left. • To toggle between values in a field.

	Right key	<ul style="list-style-type: none"> • To scroll forwards through multiple choices within a field. • To move the entry position in a(n) (alpha)numerical entry field from left to right. • To toggle between values in a field.
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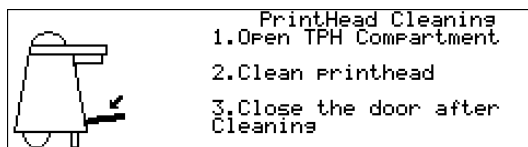


You can hold down an arrow key to scroll quickly through a list or a menu.

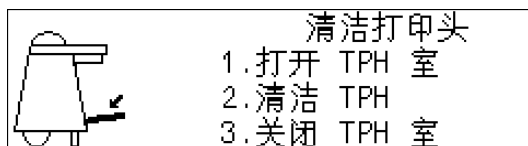
The display

The Drystar 4500 control panel has a backlit LCD display. We distinguish two panel types depending on the selected language:

- a backlit LCD display with 8 lines for Western languages (e.g. Dutch, French, Portuguese, Swedish,...).



- a backlit LCD display with 4 lines for all other languages (e.g. Greek, Chinese, Korean, Polish,...).



Whether a display is translated or not depends on the operating mode.



Contact Agfa for the latest Drystar 4500 language availability status.

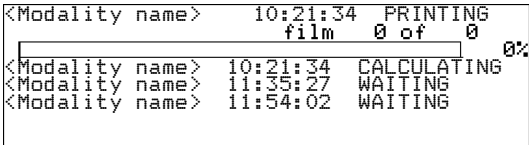
Operator mode

In **operator mode**, appropriate information is displayed, in accordance with the status of the printer.

- The operator basic screen looks as follows, indicating that the Drystar 4500 is ready for operation and that no job is currently being executed.



- During printing, calculation and other processes, as the printer is busy with at least one job, the 'Print queue' screen is displayed:



- The **progress indicator** keeps the user informed of the progress of a process (e.g. calculation of a bitmap, printing of a film, copying files). The line is gradually filled from left to right, from 0% to 100% as the process proceeds.



On the 'print queue' screen the modality name defined during installation will be used to refer to the corresponding modality. In case there is also a nickname (daily used name) defined during installation, the nickname is preferred to the modality name.

Refer to '[Overview of operator functions](#)' on page 30.

Key-operator mode

In **key-operator mode**, operation is menu driven. The menu displays the key-operator functions and the active keys.

1

1 Show settings

2 Change settings

3 Print image

4 Save configuration

5 Restore configuration

6 Calibration

7 Installation

8 Quality Control

Key-operator
Main menu

X quit

Y ok

↵select

2

Data entry

When entering numerical or alphanumeric data, always adhere to the following principles:

- Only (alpha)numerical data can be entered.
- During the data entry, the field is displayed in reverse mode.
- Increment the number in a(n) (alpha)numerical entry field by pressing the Up key. Transition from 9 to 0 of one figure will also increment the next figure to the left, respecting the valid limits of the range.
- Decrement the number in a(n) (alpha)numerical entry field by pressing the Down key. Transition from 0 to 9 of one figure will also decrement the next figure to the left, respecting the valid limits of the range.
- Move the entry position in a(n) (alpha)numerical entry field from right to left by pressing the Left key.
- Move the entry position in a(n) (alpha)numerical entry field from left to right by pressing the Right key.
- Press and hold down a key to repeat arrow key actions.
- To accept an entry in a menu, press the Confirm key.
- A short beep acknowledges and terminates the entry.

Switching on the Drystar 4500



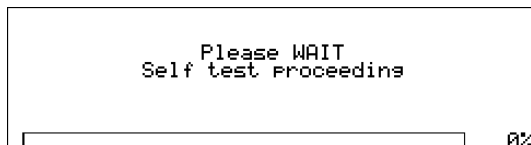
Before switching on the Drystar 4500, read the safety instructions. Refer to *'Security precautions'* on page 12.

Follow the procedure below to ensure proper start-up of the Drystar 4500 and to check that everything is working correctly.

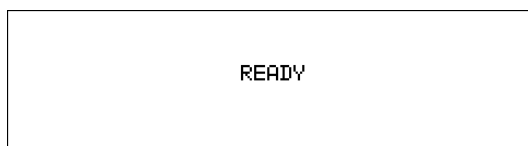
- 1 Check that the power cord is plugged in and then switch on the printer by pressing the **Power/Reset** button.



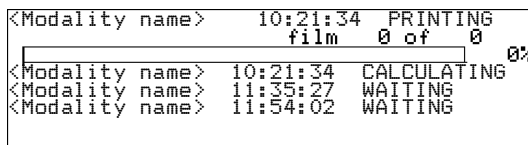
On the display, the following message is displayed. After a short while, a progress indicator will show the proceeding of the self test.



- 2 The printer is ready for operation:
 - If, on the front panel display, the READY message is shown, *the status indicator LED is constant green.*



- If, on the front panel display, the 'Print queue' screen is shown, *the status indicator LED is green and blinking.*



3 Make sure that the printer is loaded with appropriate consumables.



Refer to *'Loading films'* on page 38 for detailed information on loading films.



If the job status holds a warning or error indication, refer to *'Troubleshooting checklists'* on page 172.

Switching off the Drystar 4500

When you want to switch off the printer, it is recommended to follow the procedure as described below, to make sure that any pending jobs are correctly finished.



Do NOT press the Power/Reset button without first pressing the Stop button when the Drystar 4500 is busy printing a film.

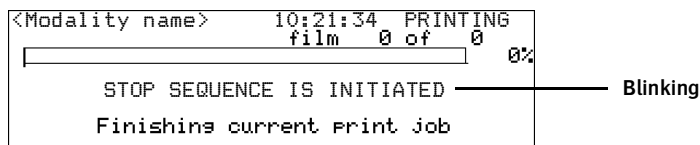
Do NOT open the printer or an input tray before performing this procedure.

- 1 Press the **Stop** button to initiate the stop sequence.



The printer will finish a print job if it is already activated. Other jobs, currently being calculated or in waiting status will not be printed.

The display shows the progress of the print job, acknowledging that the stop sequence has been initiated:



- 2 Wait until the following screen is displayed:



- 3 Press the **Power/Reset** button to switch off the Drystar 4500.



Basic operation (operator mode)

This chapter will inform on how to manage the print queue, how to print films with priority and how to load new films.

- ☐ [Overview of operator functions](#)
- ☐ [Managing the print queue](#)
- ☐ [Assigning emergency priority](#)
- ☐ [Deleting print jobs](#)
- ☐ [About Drystar 4500 consumables](#)
- ☐ [Loading films](#)

Overview of operator functions

This section focuses on the basic operating principles of the Drystar 4500. After reading this chapter, the operator should be able to produce diagnostic usable hard copies. No special technical skills are required.

All basic operator functions can be activated directly by pressing a single key on the keypad.

Function / Task	Description	Page
<i>'Managing the print queue'</i>	Jobs that have been received are put in a print queue, waiting to be printed.	31
<i>'Assigning emergency priority'</i>	To rearrange the order in which jobs are waiting to be printed. Jobs that have emergency priority are placed on top of the print queue.	33
<i>'Loading films'</i>	Instructions for loading new films on the printer.	38



In general, there is a time-out of ten minutes for operator response. When the time-out expires, the menu is closed.

Managing the print queue

You can always check the status of the print jobs.

As long as the jobs are not yet submitted for printing (i.e. they are still in the 'waiting' status), you can assign emergency priority and delete individual print jobs.



Keep in mind that one print job can hold several films to be printed. In accordance with the acquisition modality used, and with the actual settings, films can be grouped in a folder to be submitted as one print job for the Drystar 4500. Refer to the User manual of the acquisition modality for more information.

Checking the print queue

If jobs have been transmitted from the network to the Drystar 4500, they are put in the print queue on a first in, first out schedule. New jobs that are added to the queue get the 'waiting' status.

As soon as the last film of a job is ejected in the output tray, the next job that has been calculated will be put in printing status.

Example of the 'Print queue' screen:

```

<Modality name> 10:21:34 PRINTING
                  film 0 of 0
                  0%
<Modality name> 10:21:34 CALCULATING
<Modality name> 11:35:27 WAITING
<Modality name> 11:54:02 WAITING
  
```

- The first line shows information on the job that is currently being printed: modality name or nickname (if defined), time of receipt of the job and the job status.
- The second line shows how many films are to be printed for the current job, and also what film from that total is currently being printed.
- On the third line you can watch the progress of the printing process. The progress indicator is gradually filled from left to right, from 0% to 100% as the process is completed. If no job is being printed, the progress indicator will show the proceeding of the calculation process of the next job.

The other lines give information on the jobs that are still waiting in the print queue. A description of the possible status of each job is listed in the table below:

Status	Description	Action
Printing	Printing of this job is in progress.	Wait.
Calculating	The necessary calculations are being made before printing of the job can be started.	
Waiting	The job has been put in the print queue, but no processing is being done yet.	Wait. <ul style="list-style-type: none"> • To put emergency jobs on top of the queue, refer to <i>Assigning emergency priority</i> on page 33.



*If the job status holds a warning or error indication, refer to *Error messages while the printer starts up* on page 189.*

Assigning emergency priority

You can assign emergency priority to jobs that need to be printed with urgency. Jobs that are marked for priority handling are placed at the top of the print queue for immediate processing. Emergency jobs will be printed before other jobs that were received previously. However, any pending jobs that are already being calculated or scheduled for printing will be finished first.

- 1 On the keypad, press the Emergency key.



The 'Emergency printing' screen is displayed:

EMERGENCY		
<Modality name>	18-01-2005	10:21:34
<Modality name>	18-01-2005	11:35:27
<Modality name>	18-01-2005	11:54:02
quit	ok	select



Only the jobs that have the 'waiting' status are displayed. Print jobs which already have an emergency status are blinking.

You can press the Escape key to return to the previous menu without making changes in the job order ('Quit').

- 2 Press the Down and Up keys to scroll through the jobs and press the Confirm key to select the job that must be printed with emergency priority.



Printing will be resumed in accordance with the changed queue order.

Deleting print jobs

You can remove jobs from the print queue if they are in the ‘waiting status’. However, any pending jobs that are already being calculated or scheduled for printing will be finished. Those jobs can not be deleted.

- 1 On the keypad, press the Delete key.



The ‘Delete print job’ screen is displayed:

DELETE		
<Modality name>	18-01-2005	10:21:34
<Modality name>	18-01-2005	11:35:27
<Modality name>	18-01-2005	11:54:02
X quit	✓ ok	↑↓select



Only the jobs that have the ‘waiting’ status are displayed

You can press the Escape key to return to the previous screen without deleting print jobs (‘Quit’).

- 2 Press the Down and Up keys to scroll through the jobs and press the Confirm key to select the job that must be deleted.



The ‘Confirm delete’ screen is displayed.

Delete selected job ?		
<Modality name>	18-01-2005	11:35:27
X cancel	✓ confirm	

You can press the Escape key to return to the previous screen without deleting print jobs (‘Cancel’).

- 3** Press the Confirm key to delete the print job.



Printing will be resumed with the next job. The job that has been deleted will not be printed.

About Drystar 4500 consumables

The Drystar 4500 can handle blue-transparent and clear-transparent films.
Available film formats are 8x10” or 10x12”.

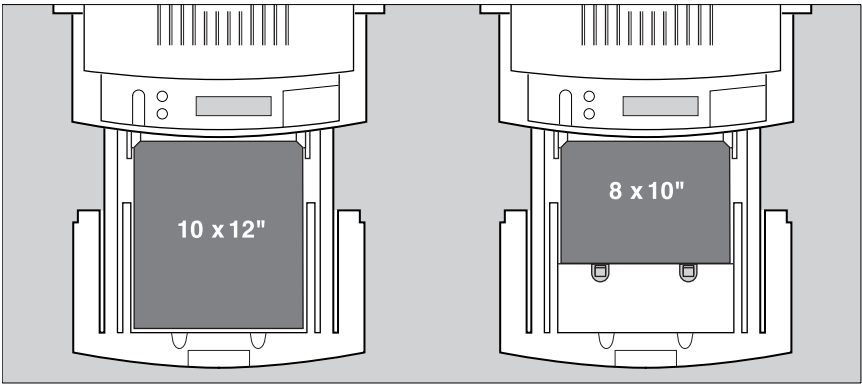
The printer has 2 input trays. The upper input tray always uses 8x10” films and the lower input tray can use either 8x10” or 10x12” films.

The key-operator can adjust the film size setting for the lower input tray (either 8x10” or 10x12”). Refer to ‘*Changing the film format of the lower tray*’ on page 162 and/or ‘*Changing the film format of the lower tray*’ on page 67.

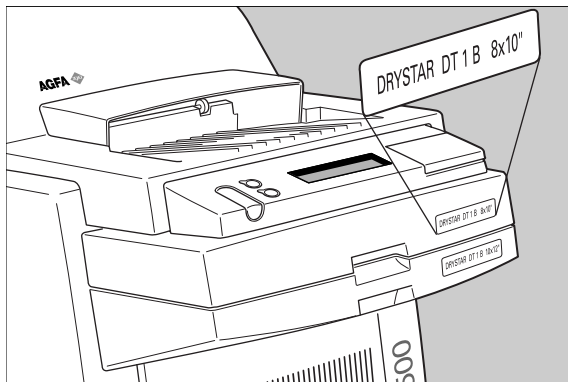
Labeling the input trays

The Drystar 4500 uses following films:

	Format
Upper input tray	8x10” either blue based (DT 1 B) as clear based (DT 1 C)
Lower input tray	8x10” or 10x12” either blue based (DT 1 B) as clear based (DT 1 C)



Appropriate labels have been applied on the film trays by the service personnel, indicating the type of new film to be loaded when the tray is empty.



Loading films

Introduction

This section describes how to load the Drystar 4500 with appropriate films.

The Drystar 4500 can be loaded with both 8x10" and 10x12" films.



The Drystar 4500 can be loaded with new films in full daylight. Loading films is easy and can be done in no time. Follow the procedures as described in this section.

The Drystar 4500 will inform you in several ways that an input tray is empty:

- An audible signal,
- the Status indicator LED is flashing (red color),
- the display screen shows a message informing you that either the upper or lower input tray is empty.



Do NOT open the input tray when the display message says so!

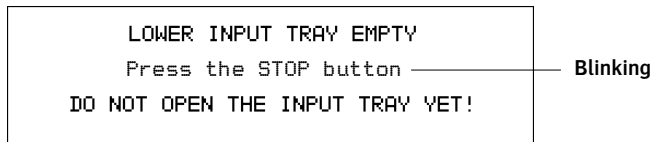
In the procedure, we will assume that the lower input tray is to be loaded. Except for the fact that you can not change the film format, the procedure for the upper input tray is identical.



The procedure is slightly different, depending on the fact whether the Drystar 4500 is printing/calculating or in the ready state. When the printer is printing/calculating, refer to [‘When the Drystar 4500 is printing or calculating:’](#) on page 39, otherwise, refer to [‘Film loading procedure:’](#) on page 40.

When the Drystar 4500 is printing or calculating:

- 1 The display shows the following message:

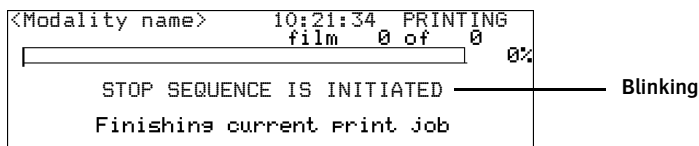


Do NOT press the Power/Reset button without first pressing the Stop button when the Drystar 4500 is busy printing a film

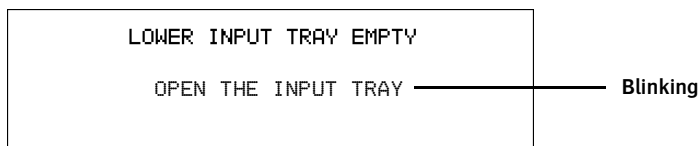
- 2 Press the **Stop button** to initiate the stop sequence.



- 3 Wait while the printer is finishing printing any current jobs.



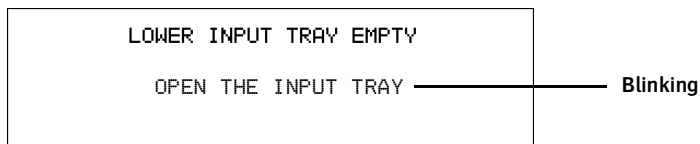
The printer is ready when the following message appears:



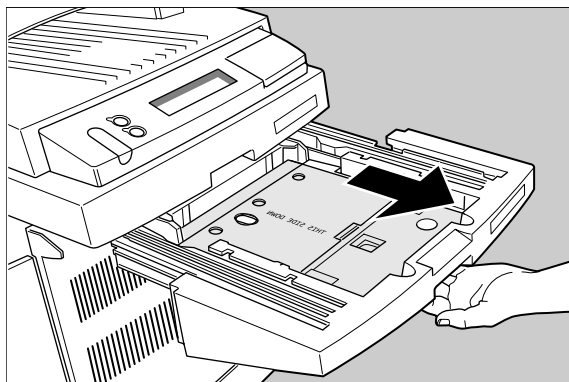
- 4 Proceed with the *'Film loading procedure:'* on page 40.

Film loading procedure:

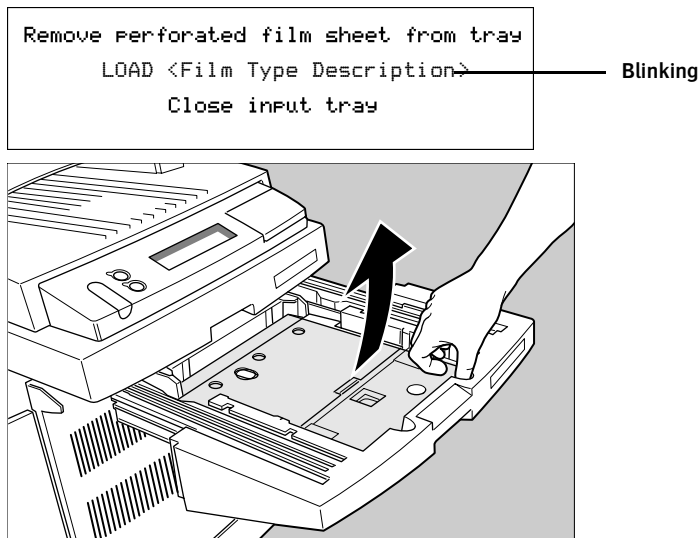
- 1 The printer is ready to be loaded with new films when the following message appears:



- 2 Open the empty input tray completely to make the tray accessible.

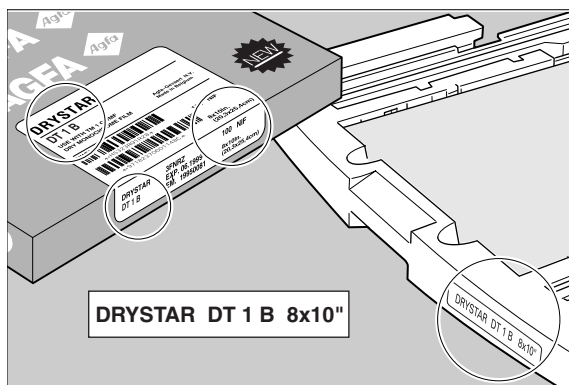


3 Remove the perforated protective sheet from the input tray.



4 Open a film pack, making sure that the film type corresponds with both:

- The film type description on the display (refer to the screen above).
- The film type as indicated on the label on the film tray.

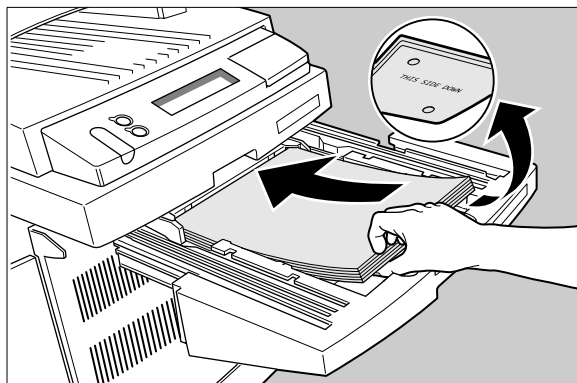


You can find the film type on the film packaging. The label may show some additional characters after the film type, e.g. 'DRYSTAR DT 1 C'. Those characters are not relevant for the printer settings, and you can ignore them.



When you have to load a film of another type, you will have to change the film type settings first. Refer to '[Changing the configuration settings](#)' on page 56.

- 5 Remove the plastic bag with the film pack from the film box.
- 6 Open the plastic bag and take the film pack.
- 7 Place the new film pack in the film tray.

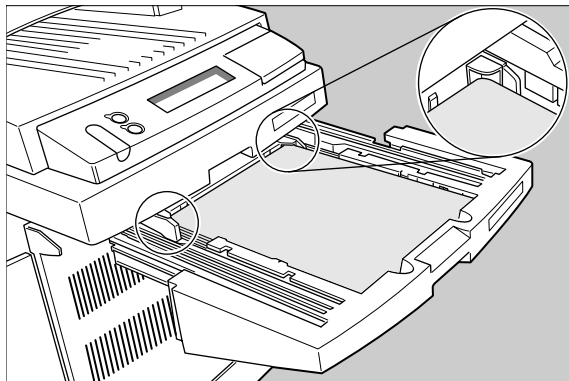


Make sure that the sheet labeled “This side down” is at the bottom of the film pack when it is loaded.



Make sure not to load more than one film pack in an input tray. Loading more than one film pack in an input tray may damage the Drystar 4500.

- 8 Verify that the film pack is kept in place under the two retainers.



- 9 Close the input tray.



The Drystar 4500 resumes printing as soon as the tray is closed.

Advanced operation (key-operator mode)

This chapter gives an overview of functions for the advanced user:

- ☐ Overview of key-operator functions
- ☐ Viewing printer information
- ☐ Changing the configuration settings
- ☐ Printing images
- ☐ Saving the configuration settings
- ☐ Restoring the configuration settings
- ☐ Performing the calibration procedures
- ☐ Installation
- ☐ Quality Control

Overview of key-operator functions

The key-operator menus make it possible to use the Drystar 4500 advanced functions. If not specified otherwise, the functions are described in detail in this chapter.

For general information on the functions of the keys on the Drystar 4500, refer to *'The user interface'* on page 19.

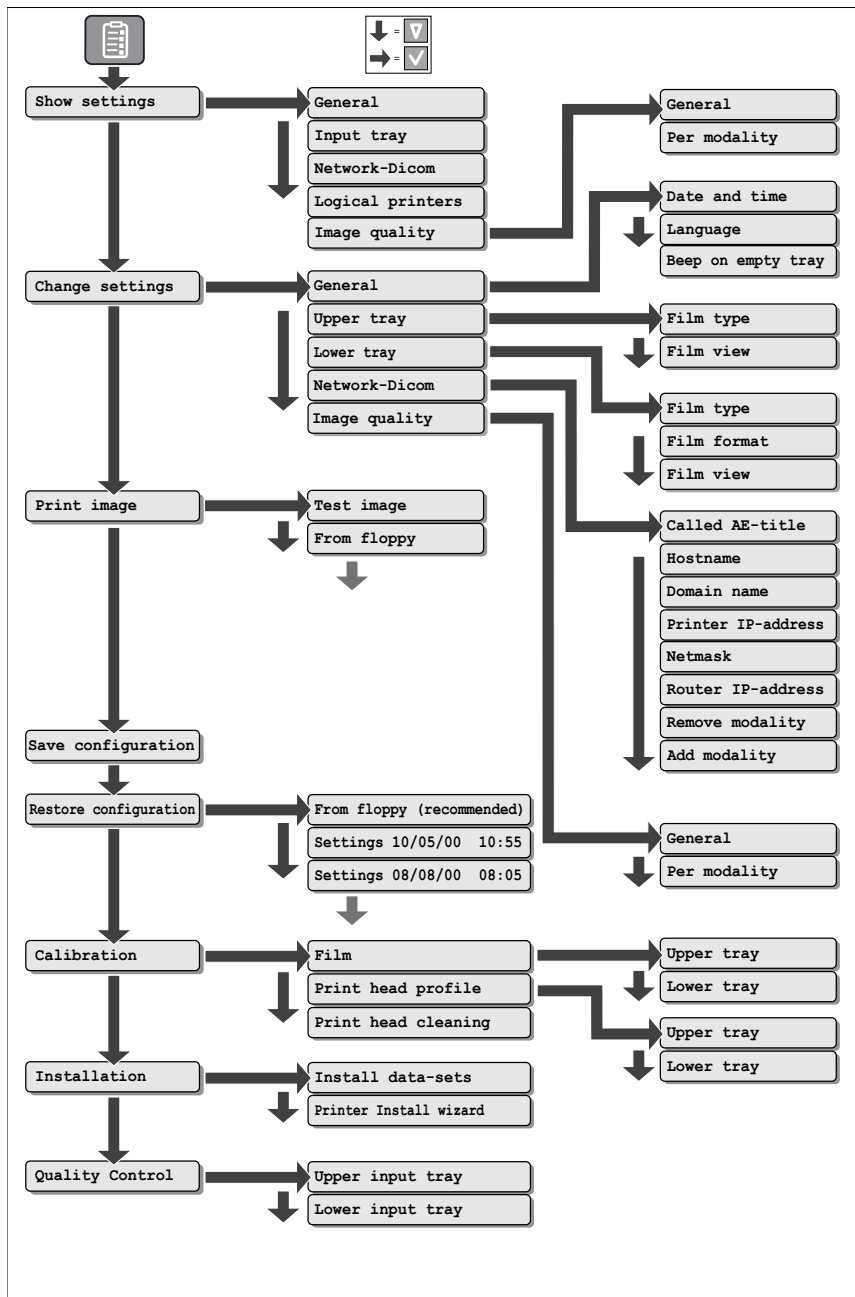
Overview

The Drystar 4500 features the following functions on the main menu level of the key-operator mode:

Menu item	Function	Page
Show settings	To consult the current settings of the printer.	49
Change settings	To change the current settings of the printer.	56
Print image	To print one of the standard Drystar 4500 test images. To load and print images from a floppy disk.	93
Save configuration	To make a back-up of the printer settings.	99
Restore configuration	To restore the back-up of the printer settings.	101
Calibration	To maintain optimal image quality.	105
Installation	To install the software with the installation wizard.	113
Quality control	To control with a daily procedure the image quality.	134

Refer to the indicated page for an explanation of the function and the appropriate procedures.

The menu structure



Accessing the key-operator menus

- The key-operator mode functions (i.e. the main menu level) can be accessed by pressing the Key-operator key on the front panel.



After pressing the Key-operator key the Main menu is displayed:

1 Show settings	Key-operator
2 Change settings	Main menu
3 Print image	
4 Save configuration	X quit
5 Restore configuration	✓ ok
6 Calibration	↵ select
7 Installation	
8 Quality Control	

- You can scroll through the menu items by pressing the Down and Up keys and select a menu item by pressing the Confirm key.



- At any moment, you can press the Escape key on the main menu level to exit the key-operator mode. If you press this key on a lower level menu you are returned to the higher level menu. If you press this key on a data screen after entering information, all changes on that screen are lost.



- If the key-operator does not interact with the menu for an extended period (ten minutes or more), the menu will time out and revert back to the Ready state. The key-operator will receive a warning that the time-out is about to expire prior to this occurring:

Time-out is about to expire...	Key-operator
	✓ continue

Press the Confirm key to return to the Key-operator menu. Otherwise, the Key-operator menu will be closed.



The Drystar 4500 will sound a long beep if you press a key that is not to be used at that moment.

Viewing printer information

A number of data and parameter settings of the printer can be viewed by using the ‘**Show settings**’ function:

Show settings	Page
General	
‘Viewing general information’	50
Input tray	
‘Viewing input tray information’	51
Network-Dicom	
‘Viewing network-Dicom information’	52
Logical printers	
‘Viewing logical printers’	53
Image quality	
‘Viewing general Image quality information’	54
‘Viewing Image quality information of a modality’	55

Accessing the Show settings menu

- 1 Press the Key-operator key to enter the key-operator mode.
- 2 On the Key-operator main menu, press the Confirm key to select ‘Show settings’.
The Show settings menu is displayed:

1 General	Key-operator
2 Input tray	Show settings
3 Network-Dicom	
4 Logical Printers	X quit
5 Image quality	Y ok
	↑select



This menu is the starting point for viewing printer information (see below).

- 3 Press the Escape key to return to the Key-operator main menu.
- 4 Press the Escape key to quit the key-operator mode.

Viewing general information

- 1 Perform steps 1 and 2 of the [‘Accessing the Show settings menu’](#) procedure, on page 49.
- 2 On the Show settings menu, press the Confirm key to select ‘General’.

The ‘General’ info screen is displayed:

Serial No: 1024	Key-operator
Type: DS4500	General
SW-release: 3.0.0 A18	
Total prints: 43567	✓ ok
Next PM: 60424	↵ scroll
Install date: 17 MAR 2000	
Last repair : 30 SEP 2000	
Beep on empty tray: 5	
05 APR 2005 15:36:12	

On the ‘General’ info screen you can see:

- the serial number of the printer,
- the printer type,
- the currently installed software version,
- the total number of prints,
- the next preventive maintenance (PM),
- the install date,
- the last repair date,
- the beep on empty tray setting,
- the current date and time.



In case there are two formats (8x10" and 10X12"), the number of prints is shown for both formats.

- 3 Press the Confirm key to return to the Show settings menu.

Viewing input tray information

- 1 Perform steps 1 and 2 of the [‘Accessing the Show settings menu’](#) procedure, on page 49.
- 2 On the Show settings menu, press the Down key once, followed by the Confirm key to select ‘Input tray’.

The ‘Input tray’ screen is displayed:

UPPER INPUT TRAY :	Key-operator
Film type : DT1B	Input tray
Film format : 8x10"	
Film view : normal	✓ ok
LOWER INPUT TRAY :	
Film type : DT1B	
Film format : 10x12"	
Film view : back	

For both trays, information is displayed on the currently loaded film:

- Film type
 - Film format
 - Film view
- 3 Press the Confirm key to return to the Show settings menu.

Viewing network-Dicom information

- 1 Perform steps 1 and 2 of the 'Accessing the Show settings menu' procedure, on page 49.
- 2 On the Show settings menu, press the Down key twice, followed by the Confirm key to select 'Network-Dicom'.

The 'Network-Dicom' screen is displayed:

AE-title:DS4500	Key-operator	
Hostname:DS4500	Network-Dicom	
Domain: abcdefghijkl		
PrtIP-ad:0.0.0.0	✓ ok	e.g.
Netmask: 0.0.0.0	← scroll	Prt IP-ad:123.123.123.123
Router: 0.0.0.0		Netmask:255.255.255.255
MAC ad: 08:00:66:80:3c:f		Router:123.123.123.123

Information is displayed on the current network settings.

- 3 Press the Confirm key to return to the Show settings menu.

Viewing logical printers

- 1 Perform steps 1 and 2 of the [‘Accessing the Show settings menu’](#) procedure, on page 49.
- 2 On the Show settings menu, press the Down key three times, followed by the Confirm key to select ‘Logical printers’.

The following screen will appear:

Logical Printers:	Key-operator	1 other logical printer e.g. DS_4500_2
- DEFAULT PRINTER	Log. printers	
Printer(s) _____	✓ ok	

This screen gives an overview of the logical printers defined in the Drystar 4500.



The Logical printers information can be helpful when assigning a modality output to a particular Drystar 4500 profile. Configuring logical printers can only be done via the remote webpages. Contact your local service organization for more information.

- 3 Press the Confirm key to return to the Image quality menu.
- 4 In the Image quality menu, press the Escape key to return to the Show settings menu.

Viewing general Image quality information

- 1 Perform steps 1 and 2 of the [‘Accessing the Show settings menu’](#) procedure, on page 49.
- 2 On the Show settings menu, press the Down key four times, followed by the Confirm key to select ‘Image quality’.

The following screen will appear:

1 General	Key-operator
2 <Modality name>	Image quality
3 <Modality name>	
4 <Modality name>	X quit
	Y ok
	↵select

- 3 Press the Confirm key to select ‘General’.
- The general Image quality settings are displayed, in case film calibration is set on.

General Settings	Key-operator
	Image quality
Film calibration : On	
Densitometer:Macbeth TR92	Y ok
	↵scroll

- 4 Press the Confirm key to return to the Image quality menu.
- 5 In the Image quality menu, press the Escape key to return to the Show settings menu.

Viewing Image quality information of a modality

- 1 Perform steps 1 and 2 of the '[Accessing the Show settings menu](#)' procedure, on page 49.
- 2 On the Show settings menu, press the Down key four times, followed by the Confirm key to select 'Image quality'.

The following screen will appear:

1 General	Key-operator
2 <Modality name>	Image quality
3 <Modality name>	
4 <Modality name>	X quit
	Y ok
	↑select

- 1 Press the Up/Down arrow keys to select the desired modality.
- 2 Press the Confirm key to display the Image quality settings for the selected modality, or the Escape key to quit.

Look-up table :	Key-operator
Linear	Image quality
Interpolation :	✓ ok
Replication	
Maximum density :	
3.00	

- 3 Press the Confirm key to return to the Image quality menu.
- 4 In the Image quality menu, press the Escape key to return to the Show settings menu.

Changing the configuration settings

A number of data and parameters settings of the printer can be viewed and changed by using the **'change settings'** function:



Each time the settings have been changed, the Drystar 4500 asks if you want to accept the modifications. When answering 'yes', the new configuration is automatically stored on the hard disk of the printer. You will also be asked to create a back-up floppy with the new settings when leaving the 'Change settings' menu.

Change settings	Page
General	
'Changing the date and time'	59
'Changing the language'	60
'Changing the beep on empty tray settings'	61
Upper tray	
'Changing the film type of the upper tray'	62
'Changing the film view of the upper tray'	64
Lower tray	
'Changing the film type of the lower tray'	65
'Changing the film format of the lower tray'	67
'Changing the film view of the lower tray'	69
Network (Dicom)	
'Changing the called AE-title'	71
'Changing the Hostname'	72
'Changing the Domain name'	73
'Changing the Printer IP-address'	74
'Changing the Netmask'	76
'Changing the Router IP-address'	78
'Removing a modality'	80
'Adding a modality'	81

Image quality	
'Changing general image quality settings - Film calibration'	84
'Changing general image quality settings - Default densitometer'	86
'Changing Image quality setting for a modality - Selecting a lookup table'	87
'Changing Image quality setting for a modality - Changing the Interpolation'	89
'Changing Image quality setting for a modality - Changing the maximum density (Dmax)'	91

Accessing the Change settings menu



Before you can change the settings, the 'printer installation wizard' should be executed. If the printer has not been installed yet, the following screen is displayed:

Settings can only be changed after Printer installation.	Key-operator Change settings
	X quit install

Proceed as follows to access the 'Change settings' menu:

- 1 Press the Key-operator key to enter the key-operator mode.
- 2 On the Key-operator main menu, press the Down key once, followed by the Confirm key to select 'Change settings'.

The 'Change settings' screen is displayed:

1 General	Key-operator Change settings
2 Upper input tray	X quit ok select
3 Lower input tray	
4 Network-Dicom	
5 Image quality	



This menu is the starting point for changing the settings (see below).

When the settings have been changed, the ‘accept modifications’ window is displayed:

ACCEPT MODIFICATIONS ?	Key-operator Change settings
yes	✓ ok
no	↵select

Select ‘no’ if you do not wish to accept the changed settings. Press the Confirm key. You will return to the Main menu.

Select ‘yes’ if you wish to accept the changed settings. Press the Confirm key. You will return to ‘Change settings’ screen.

- 3 If you want to change other settings, change them first.
- 4 If you do not want to make other changes, press the Escape key two times to return to the main menu. You will be asked to back up the new configurations on a floppy disk.

The ‘Update back-up’ screen is displayed:

UPDATE BACKUP ?	Key-operator Change settings
yes	✓ ok
no	↵select

If you want to save the configuration on the back-up floppy, select ‘yes’ and press the Confirm key. The printer will now enter the *‘Save configuration procedure’* (see page 99).

If you only want to save the configuration on the printer’s hard disk, select ‘no’ and press the Confirm key. You will return to the ‘main menu’.

Changing the General settings

Changing the date and time

- 1 Perform steps 1 to 2 of the [‘Accessing the Change settings menu’](#) procedure on page 57.
- 2 On the ‘Change setting’ screen, press the Confirm key to select ‘General’.
The ‘General’ screen is displayed:

GENERAL		Key-operator
1 Date and time		Change settings
2 Language		X quit
3 Beep on empty tray		Y ok
		→ select

- 3 Press the Confirm key to select ‘Date and time’.
The ‘Date and time’ screen is displayed:

DATE AND TIME		Key-operator
5-JAN-2005 16:21:33		Change settings
dd-mmm-yyyy hh:mm:ss		X quit
		Y ok
		→ select
		↑ change

- 4 Press the Up/Down arrow keys to increment/decrement the numbers. Press the Left/Right arrow keys to move through the digits.



For more info, refer to [‘Data entry’](#) on page 25.

- 5 Press the Confirm key to store the data, or the Escape key to quit the procedure without any changes.

Changing the language

- 1 Perform steps 1 to 2 of the 'Accessing the Change settings menu' procedure on page 57 to select the 'General' screen.
- 2 On the 'Change setting' screen, press the Confirm key to select 'General'.
The 'General' screen is displayed:

GENERAL	
1 Date and time	Key-operator Change settings
2 Language	X quit
3 Beep on empty tray	Y ok
	↓select

- 3 On the 'General' screen, press the Down key once, followed by the Confirm key to select 'Language'.
The 'Language' screen is displayed with the available languages:

LANGUAGE	
1*English	Key-operator Change settings
2 Nederlands	X quit
3 Norsk	Y ok
4 Italiano	↓select
(<*) Automatic reboot	



The number of displayed languages depends on the installed dataset. Contact your local Agfa service organization for the latest Drystar 4500 language availability status.

- 4 Press the Up/Down arrow keys to select the desired language.
- 5 Press the Confirm key to store the data. The printer will reboot (close down and restart) automatically. If you do not want to save the changes, press the Escape key to quit the procedure without any changes.

Changing the beep on empty tray settings

- 1 Perform steps 1 to 2 of the [‘Accessing the Change settings menu’](#) procedure on page 57 to select the ‘General’ screen.

- 2 On the ‘Change setting’ screen, press the Confirm key to select ‘General’.

The ‘General’ screen is displayed:

GENERAL	
1 Date and time	Key-operator Change settings
2 Language	X quit
3 Beep on empty tray	Y ok
	↵select

- 3 On the ‘General’ screen, press the Down key twice, followed by the Confirm key to select ‘Beep on empty tray’.

The ‘Audible alarm on empty tray’ screen is displayed:

Audible alarm on EMPTY TRAY	
No alarm	Key-operator Change settings
5 times	X quit
While tray is empty	Y ok
	↵select

- 4 Select ‘No alarm’ if you do not want an audible signal to warn you that a tray is empty. Select ‘5 times’ to hear 5 consecutive beeps at the moment a tray gets empty. Select ‘While tray is empty’ to hear a beep the whole time a tray is empty.
- 5 Press the Confirm key to store the data, or the Escape key to quit the procedure without any changes.

Changing the Upper tray settings

Changing the film type of the upper tray

- 1 Perform steps 1 and 2 of the [‘Accessing the Change settings menu’](#) procedure on page 57.
- 2 On the Change settings menu, press the Down key once, followed by the Confirm key to select ‘Upper tray’.

The ‘Upper input tray’ screen is displayed:

UPPER INPUT TRAY	Key-operator Change settings
1 Film type	X quit
2 Film view	Y ok
	↵ select

- 3 Press the Confirm key to select ‘Film type’.

The ‘Film type’ screen is displayed:

FILM TYPE	Key-operator Change settings
1*Drystar DT1B	X quit
2 Drystar DT1C	Y ok
	↵ select

- 4 Press the Up/Down arrow keys to select the desired film type.
- 5 Press the Confirm key to store the data, or the Escape key to quit the procedure without any changes.

If you have stored the data, the following screen is displayed:

ACCEPT MODIFICATIONS ?	Key-operator Change settings
yes	Y ok
no	↵ select

- 6 Select 'no' if you do not wish to accept the changed settings. Press the Confirm key. You will return to the Main menu.

Select 'yes' if you wish to accept the changed settings. Press the Confirm key. The following screen is displayed:

Open upper input tray	Key-operator
	Change settings

- 7 Insert the correct film type in the upper input tray and close the input tray.



After you have changed the film type and inserted new films, you have to perform a film calibration procedure. Refer to *'Performing the calibration procedures'* on page 105.

Changing the film view of the upper tray

- 1 Perform steps 1 and 2 of the [‘Accessing the Change settings menu’](#) procedure on page 57 to select the ‘Upper tray’ screen.
- 2 In the ‘Upper tray’ screen, press the Down key, followed by the Confirm key to select ‘Film view’.

The ‘Film view’ screen is displayed:

FILM VIEW		Key-operator
1*Normal		Change settings
2 Back		X quit
		Y ok
		↵select

- 3 Press the Up/Down arrow keys to select the desired film view.
- 4 Press the Confirm key to store the data, or the Escape key to quit the procedure without any changes.

Changing the Lower tray settings

Changing the film type of the lower tray

- 1 Perform steps 1 and 2 of the '[Accessing the Change settings menu](#)' procedure on page 57.
- 2 On the Change settings menu, press the Down key twice, followed by the Confirm key to select 'Lower tray'.

The 'Lower input tray' screen is displayed:

LOWER INPUT TRAY	Key-operator Change settings
1 Film type	
2 Film format	X quit
3 Film view	Y ok
	↵select

- 3 Press the Confirm key to select 'Film type'.

The 'Film type' screen is displayed:

FILM TYPE	Key-operator Change settings
1*Drystar DT1B	
2 Drystar DT1C	X quit
	Y ok
	↵select

- 4 Press the Up/Down arrow keys to select the desired film type.
- 5 Press the Confirm key to store the data, or the Escape key to quit the procedure without any changes.

If you have stored the data, the following screen is displayed:

ACCEPT MODIFICATIONS ?	Key-operator Change settings
yes	
no	Y ok
	↵select

- 6 Select 'no' if you do not wish to accept the changed settings. Press the Confirm key. You will return to the Main menu.

Select 'yes' if you wish to accept the changed settings. Press the Confirm key.
The following screen is displayed:

Is film Package with next settings inserted in the upper input tray?	Key-operator Change settings
Film type : DT1C Film format :8x10" Film view : normal	X no yes

- 7 If the film package in the lower input tray matches the description on the screen, select 'yes' and press the Confirm key. You will return to the 'Lower input tray' setting display and the film format change procedure ends here. If the film package in the lower input tray does not match the description on the screen, select 'no' and press the Confirm key.

The following screen is displayed:

Open upper input tray	Key-operator Change settings

- 8 Open the upper input tray.

The following screen is displayed:

Insert film Package with next settings:	Key-operator Change settings
Film type : DT1C Film format :8x10" Film view : normal	
Close input tray	

- 9 Insert a film package that matches the description on the display and close the input tray. You will return to the 'Lower input tray' setting display.



After you have changed the film type and inserted new films, you will have to perform a film calibration procedure. Refer to ['Performing the calibration procedures'](#) on page 105.

Changing the film format of the lower tray

- 1 Perform steps 1 and 2 of the '[Accessing the Change settings menu](#)' procedure on page 57 to select the 'Lower tray' screen.
- 2 On the Change settings menu, press the Down key twice, followed by the Confirm key to select 'Lower tray'.

The 'Lower input tray' screen is displayed:

LOWER INPUT TRAY	
1 Film type	Key-operator Change settings
2 Film format	X quit
3 Film view	Y ok
	↵select

- 3 On the 'Lower tray' screen, press the Down key once, followed by the Confirm key to select 'Film format'.

The 'Film format' screen is displayed:

FILM FORMAT	
1*10x12"	Key-operator Change settings
2 8x10"	X quit
	Y ok
	↵select

- 4 Press the Up/Down arrow keys to select the desired film format.
- 5 Press the Confirm key to store the data, or the Escape key to quit the procedure without any changes.

If you have stored the data, the following screen is displayed:

ACCEPT MODIFICATIONS ?	
yes	Key-operator Change settings
no	Y ok
	↵select

- 6 Select 'no' if you do not wish to accept the changed settings. Press the Confirm key. You will return to the Main menu.

Select 'yes' if you wish to accept the changed settings. Press the Confirm key.
The following screen is displayed:

Is film Package with next settings inserted in the upper input tray?	Key-operator Change settings
Film type : DT1C Film format :8x10" Film view : normal	X no yes

- 7 If the film package in the lower input tray matches the description on the screen, select 'yes' and press the Confirm key. You will return to the 'Lower input tray' setting display and the film format change procedure ends here. If the film package in the lower input tray does not match the description on the screen, select 'no' and press the Confirm key.

The following screen is displayed:

Open upper input tray	Key-operator Change settings

- 8 Open the upper input tray.

The following screen is displayed:

Insert film Package with next settings:	Key-operator Change settings
Film type : DT1C Film format :8x10" Film view : normal Close input tray	

- 9 Perform the mechanical modification as described in '[Changing the film format of the lower tray](#)' on page 162.
- 10 Insert a film package that matches the description on the display and close the input tray. You will return to the 'Lower input tray' setting display.

Changing the film view of the lower tray

- 1 Perform steps 1 and 2 of the [‘Accessing the Change settings menu’](#) procedure on page 57 to select the ‘Lower tray’ screen.
- 2 On the ‘Change setting’ menu, press the Down key twice, followed by the Confirm key to select ‘Lower tray’.

The ‘Lower input tray’ screen is displayed:

LOWER INPUT TRAY	
1 Film type	Key-operator Change settings
2 Film format	X quit
3 Film view	Y ok
	↵select

- 3 In the ‘Lower tray’ screen, press the Down key twice, followed by the Confirm key to select ‘Film view’.

The ‘Film view’ screen is displayed:

FILM VIEW	
1*Normal	Key-operator Change settings
2 Back	X quit
	Y ok
	↵select

- 4 Press the Up/Down arrow keys to select the desired film view.
- 5 Press the Confirm key to store the data, or the Escape key to quit the procedure without any changes.

If you have stored the data, the ‘Accept modifications’ screen is displayed:

ACCEPT MODIFICATIONS ?	
yes	Key-operator Change settings
no	Y ok
	↵select

- 6 Select 'no' if you do not wish to accept the changed settings. Press the Confirm key. You will return to the Main menu.

Select 'yes' if you wish to accept the changed settings. Press the Confirm key. The following screen is displayed:

Is film Package with next settings inserted in the upper input tray?	Key-operator Change settings
Film type : DT1C Film format :8x10" Film view : normal	X no yes

- 7 Select 'yes' and press the Confirm key to confirm your change of film view setting. The same films can be used when changing only the film view settings.

Changing Network-Dicom configuration

Changing the called AE-title

- 1 Perform steps 1 to 2 of the [‘Accessing the Change settings menu’](#) procedure on page 57.
- 2 On the ‘Change setting’ screen, press the Down key three times, followed by the Confirm key to select ‘Network-Dicom’.

The ‘Network-Dicom’ screen is displayed:

NETWORK-DICOM	
1 Called AE-title	Key-operator Change settings
2 Hostname	
3 Domain name	X quit
4 Printer IP-address	Y ok
5 Netmask	→select
6 Router IP-address	
7 Remove modality	
8 Add modality	

- 3 Press the Confirm key to select ‘Called AE-title’.

The ‘Called AE-title’ screen is displayed:

CALLED AE-TITLE	
-----	Key-operator Change settings
	X quit
	Y ok
	→select
	↵change
max. 16 characters	

e.g. DS4500

If the printer AE-title has already been assigned, it will be shown on the display.

- 4 Change the printer AE-title by means of the arrow keys. Refer to [‘Data entry’](#) on page 25. Make sure not to enter more than 16 characters.



Entries are case sensitive.

- 5 Press the Confirm key to store the data, or the Escape key to quit the procedure without any changes.

Changing the Hostname

- 1 Perform steps 1 to 2 of the *'Accessing the Change settings menu'* procedure on page 57.
- 2 On the 'Change setting' screen, press the Down key three times, followed by the Confirm key to select 'Network-Dicom'.

The 'Network-Dicom' screen is displayed:

NETWORK-DICOM	
1 Called AE-title	Key-operator
2 Hostname	Change settings
3 Domain name	
4 Printer IP-address	X quit
5 Netmask	Y ok
6 Router IP-address	↵select
7 Remove modality	
8 Add modality	

- 3 In the 'Network-Dicom' screen, press the Down key once, followed by the Confirm key to select 'Hostname'.

The 'Hostname' screen is displayed:

HOSTNAME	
-----	Key-operator
	Change settings
	X quit
	Y ok
	↵select
	↵change

e.g. DS4500

- 4 Change the hostname by means of the arrow keys. Refer to *'Data entry'* on page 25. Make sure not to enter more than 16 characters.
- 5 Press the Confirm key to store the data, or the Escape key to quit the procedure without any changes.

Changing the Domain name

- 1 Perform steps 1 to 2 of the [‘Accessing the Change settings menu’](#) procedure on page 57.
- 2 On the ‘Change setting’ screen, press the Down key three times, followed by the Confirm key to select ‘Network-Dicom’.

The ‘Network-Dicom’ screen is displayed:

NETWORK-DICOM	
1 Called HE-title	Key-operator Change settings
2 Hostname	
3 Domain name	X quit
4 Printer IP-address	Y ok
5 Netmask	→select
6 Router IP-address	
7 Remove modality	
8 Add modality _ _ _ _ _	

- 3 On the ‘Network-Dicom’ screen, press the Down key twice, followed by the Confirm key to select ‘Domain name’.

The ‘Domain name’ screen is displayed:

DOMAIN NAME	
-----+ max. 255 characters	Key-operator Change settings
	X quit
	Y ok
	→select
	↑change

- 4 Enter the domain name by means of the arrow keys. Refer to [‘Data entry’](#) on page 25. Make sure not to enter more than 16 characters.
- 5 Press the Confirm key to store the data, or the Escape key to quit the procedure without any changes.

Changing the Printer IP-address

- 1 Perform steps 1 to 2 of the *'Accessing the Change settings menu'* procedure on page 57.
- 2 On the 'Change setting' screen, press the Down key three times, followed by the Confirm key to select 'Network-Dicom'.

The 'Network-Dicom' screen is displayed:

NETWORK-DICOM	
1 Called ME-title	Key-operator
2 Hostname	Change settings
3 Domain name	
4 Printer IP-address	X quit
5 Netmask	Y ok
6 Router IP-address	↵ select
7 Remove modality	
8 Add modality	


- 3 On the 'Network-Dicom' screen, press the Down key three times, followed by the Confirm key to select 'Printer IP-address'.

The 'Printer IP-address' screen is displayed:

PRINTER IP-ADDRESS	
— 0. 0. 0. 0	Key-operator
— — — — —	Change settings
	X quit
	Y ok
	↵ select
	↵ change


e.g. 10.233. 93. 46

If the IP-address has already been assigned, it will be shown on the display.

 When no DHCP server is available and when the IP address of the printer has never been set, the printer IP address will be set to the APIPA address 169.254.10.10.

- 4 Press the Up/Down arrow keys to increment/decrement the numbers. Press the Left/Right arrow keys to move through the fields. Press the Confirm key to store the data.

 Refer to *'Data entry'* on page 25.

 Note that blank spaces will not be filled in (see examples on the next page).

Example: If the IP-address is 120.000.120.120, then the data entry should be as follows:

PRINTER IP-ADDRESS	Key-operator Change settings
120.000.120.120 ___ ___ ___ ___	X quit ✓ ok → select ↑ change

Example: If the IP-address is 120.0.120.120, then the data entry should be as follows:

PRINTER IP-ADDRESS	Key-operator Change settings
120. 0.120.120 ___ ___ ___ ___	X quit ✓ ok → select ↑ change

- 5 Press the Confirm key to store the data, or the Escape key to quit the procedure without any changes.

Changing the Netmask

- 1 Perform steps 1 to 2 of the [‘Accessing the Change settings menu’](#) procedure on page 57.
- 2 On the ‘Change setting’ screen, press the Down key three times, followed by the Confirm key to select ‘Network-Dicom’.

The ‘Network-Dicom’ screen is displayed:

NETWORK-DICOM	
1 Called ME-title	Key-operator
2 Hostname	Change settings
3 Domain name	
4 Printer IP-address	X quit
5 Netmask	Y ok
6 Router IP-address	↵ select
7 Remove modality	
8 Add modality	

- 3 On the ‘Network-Dicom’ screen, press the Down key four times, followed by the Confirm key to select ‘Netmask’.

The ‘Netmask’ screen is displayed:

NETMASK	
- 0. 0. 0. 0	Key-operator
--- --	Change settings
	X quit
	Y ok
	↵ select
	↵ change

e.g. 255.255.252. 0

If the IP-address has already been assigned, it will be shown on the display.



When no DHCP server is available and when the subnet mask of the printer has never been set, the printer subnet mask will be set to the APIPA address 255.255.0.0.

- 4 Enter the Netmask by means of the arrow keys. Refer to [‘Data entry’](#) on page 25.



Note that blank spaces will not be filled in (see examples on the next page).

Example: If the Netmask is 250.760.560. 0, then the data entry should be as follows:

NETMASK	Key-operator Change settings
250.760.560. 0 --- --- --- ---	X quit ✓ ok ← select ↑ change

- 5 Press the Confirm key to store the data, or the Escape key to quit the procedure without any changes.

Changing the Router IP-address

- 1 Perform steps 1 to 2 of the ‘[Accessing the Change settings menu](#)’ procedure on page 57.
- 2 On the ‘Change setting’ screen, press the Down key three times, followed by the Confirm key to select ‘Network-Dicom’.

The ‘Network-Dicom’ screen is displayed:

NETWORK-DICOM	
1 Called AE-title	Key-operator
2 Hostname	Change settings
3 Domain name	
4 Printer IP-address	X quit
5 Netmask	Y ok
6 Router IP-address	↵ select
7 Remove modality	
8 Add modality	

- 3 On the ‘Network-Dicom’ screen, press the Down key five times, followed by the Confirm key to select ‘Router IP-address’.

The ‘Router IP-address’ screen is displayed:

ROUTER IP-ADDRESS	
- 0. 0. 0. 0	Key-operator
--- --- ---	Change settings
	X quit
	Y ok
	↵ select
	↵ change

e.g. 10.233.92. 1

If the Router IP-address has already been assigned, it will be shown on the display.

- 4 Enter the Router IP-address by means of the arrow keys. Refer to ‘[Data entry](#)’ on page 25.



Note that blank spaces will not be filled in (see examples on the next page).

Example: If the Router IP-address is 450.000.210.120, then the data entry should be as follows:

ROUTER IP-ADDRESS	Key-operator Change settings
450.000.210.120 ___ ___ . ___ . ___	X quit ✓ ok → select ↑ change

Example: If the Router IP-address is 450.0.210.120, then the data entry should be as follows:

ROUTER IP-ADDRESS	Key-operator Change settings
450. 0.210.120 ___ ___ . ___ . ___	X quit ✓ ok → select ↑ change

- 5 Press the Confirm key to store the data, or the Escape key to quit the procedure without any changes.

Removing a modality

- 1 Perform steps 1 to 2 of the 'Accessing the Change settings menu' procedure on page 57.
- 2 On the 'Change setting' screen, press the Down key three times, followed by the Confirm key to select 'Network-Dicom'.

The 'Network-Dicom' screen is displayed:

NETWORK-DICOM	
1 Called AE-title	Key-operator
2 Hostname	Change settings
3 Domain name	
4 Printer IP-address	X quit
5 Netmask	Y ok
6 Router IP-address	↵select
7 Remove modality	
8 Add modality _ _ _ _ _	

- 3 On the 'Network-Dicom' screen, press the Down key six times, followed by the Confirm key to select 'Remove modality'.

The 'Remove modality' screen is displayed:

REMOVE MODALITY	
1 <Modality name>	Key-operator
2 <Modality name>	Change settings
3 <Modality name>	
4 <Modality name>	X quit
	Y ok
	↵select

The modality names, entered during installation of the printer, are shown in the list. If no names have been entered, the Called AE-titles are shown instead.

- 4 Select the modality which you wish to remove by means of the arrow keys.
- 5 Press the Confirm key to remove the modality name from the list, or the Escape key to quit the procedure without any changes.

Adding a modality

- 1 Perform steps 1 to 2 of the [‘Accessing the Change settings menu’](#) procedure on page 57.
- 2 On the ‘Change setting’ screen, press the Down key three times, followed by the Confirm key to select ‘Network-Dicom’.

The ‘Network-Dicom’ screen is displayed:

NETWORK-DICOM	Key-operator
1 Called AE-title	Change settings
2 Hostname	
3 Domain name	X quit
4 Printer IP-address	Y ok
5 Netmask	→select
6 Router IP-address	
7 Remove modality	
8 Add modality	

- 3 On the ‘Network-Dicom’ screen, press the Down key seven times, followed by the Confirm key to select ‘Add modality’.
- 4 The ‘Add Modality’ screen is displayed, asking you to collect the appropriate info on the new modality (see your System Administrator if necessary):

Collect following info:	Key-operator
Modality daily used name	Add modality
Modality brand	
Modality type	X quit
Modality AE-Title	Y continue

- 5 Press the Confirm key to continue, or the Escape key to quit the procedure without any changes.

The ‘Enter modality daily used name’ screen is displayed:

ENTER MODALITY DAILY USED NAME	Key-operator
-----	Add modality
	X quit
	Y ok
	→select
	→change
max_8_characters	

- 6 Enter the modality daily used name (nickname) by means of the arrow keys.
Refer to '[Data entry](#)' on page 25. Make sure not to enter more than 8 characters.

- 7 Press the Confirm key to store the data, or the Escape key to quit the procedure without any changes.

The 'Select modality brand' screen is displayed:

SELECT MODALITY BRAND	Key-operator Add modality
1 Other	X quit Y ok ↑select
2 Philips	
3 Fuji	
4 Siemens	

- 8 Press the Up/Down arrow keys to select the appropriate modality brand name.
◆ In case you have selected 'Other', the Modality AE-title will be linked with the default settings. Proceed with step 11.

- 9 Press the Confirm key to store the data, or the Escape key to quit the procedure without any changes.

The 'Select modality type' screen is displayed:

SELECT MODALITY TYPE	Key-operator Add modality
1 MXVIEW	X quit Y ok ↑select
2 MXB000	

- 10 Select modality type and press the Confirm key to store the data, or the Escape key to quit the procedure without any changes.
- 11 The 'select modality AE-title' screen is displayed:

SELECT MODALITY AE-TITLE	Key-operator Add modality
1 Via keypad (manual)	X quit Y ok ↑select
2 <Modality name>	
3 <Modality name>	
4 <Modality name>	

- 12 Press the Up/Down arrow keys to select the appropriate modality AE-title.

◆ In case you have selected '1 Enter via keypad (manual)', the 'Enter modality AE-title' screen is displayed:

ENTER MODALITY AE-TITLE	Key-operator Add modality
----- max. 16 characters	X quit Y ok ↑select ↓change

Enter the Modality AE-title by means of the arrow keys. Refer to '[Data entry](#)' on page 25. Make sure not to enter more than 16 characters.



Entries are case sensitive.

- 13 Press the Confirm key to store the data, or the Escape key to quit the procedure without any changes.

The 'Select preferred film type for <daily name or AE-title>' screen will appear:

SELECT PREFERRED FILMTYPE FOR <daily name or AE-title>	Key-operator Add modality
1*Drystar DT1B 2 Drystar DT1C	X quit Y ok ↑select

- 14 Press the Up/Down key to select the preferred film type for this modality.
- 15 Press the Confirm key to store the data, or the Escape key to quit the procedure without any changes.

The data entry for the new modality is finished now.

The printer will ask you if you want to add another modality:

ADD ANOTHER MODALITY ?	Key-operator Add modality
yes no	X quit Y ok ↑select

- 16 If you wish to add another modality, select 'yes' and press the Confirm key. You will be taken back to step 4 to repeat the procedure.
- 17 If you do not wish to add another modality, select 'no' and press the Confirm key, or press the Escape key. The printer will return to the Network-Dicom menu.

Changing the image quality settings

Changing general image quality settings - Film calibration

- 1 Perform steps 1 and 2 of the [‘Accessing the Change settings menu’](#) procedure on page 57.
- 2 On the ‘Change setting’ screen, press the Down key four times, followed by the Confirm key to select ‘Image quality’.

The following screen will appear:

1 General	Key-operator
2 <Modality name>	Image quality
3 <Modality name>	
4 <Modality name>	X quit
	Y ok
	↵select

- 3 Press the Confirm key to select ‘General’.

The ‘General settings’ screen is displayed:

1 Film calibration	Key-operator
2 Default densitometer	Gen. Settings
	X quit
	Y ok
	↵select

- 4 Press the Confirm key to select ‘Film calibration’.

The ‘Select default for film calibration’ screen is displayed:

SELECT DEFAULT for FILM CALIBRATION	Key-operator
	Gen. Settings
* On	
Off	
	X quit
	Y ok
	↵select

This setting is by default set to ON and will apply to every modality.

The current setting is marked with an *.

- 5 Press the Up/Down arrow keys to select the preferred film calibration default.
When the setting is ON, the Drystar 4500 will ask you to enter the calibration frequency:

FREQUENCY for FILM CALIBRATION	Key-operator Gen. Settings
every 5 filmPack	X quit Y ok ↓select

Enter the calibration frequency by means of the Up/Down arrow keys. Refer to '[Data entry](#)' on page 25.



1 pack = 100 sheets

E.g., if the frequency is set to 5, this means that a film calibration is executed automatically every 5 packs or every 500 sheets.



You can specify to perform an automatic film calibration after loading every "n" film packs.



For more information on film calibration settings: Refer to '[Understanding the calibration policy](#)' on page 192.

- 6 Press the Confirm key to store the data, or the Escape key to quit the procedure without any changes.

Changing general image quality settings - Default densitometer

- 1 Perform steps 1 and 2 of the 'Accessing the Change settings menu' procedure on page 57.
- 2 On the 'Change setting' screen, press the Down key four times, followed by the Confirm key to select 'Image quality'.

The following screen will appear:

1 General	Key-operator
2 <Modality name>	Image quality
3 <Modality name>	
4 <Modality name>	X quit
	Y ok
	↵select

- 3 Press the Confirm key to select 'General'.

The 'General settings' screen is displayed:

1 Film calibration	Key-operator
2 Default densitometer	Gen. Settings
	X quit
	Y ok
	↵select

- 4 Press the Down key once, followed by the Confirm key to select 'Default densitometer'.

The 'Select Default densitometer' screen is displayed:

Select default densitometer:	Key-operator
	Change settings
* Macbeth TR924	
Gretag	X quit
X-Rite 301	Y ok
X-Rite 310	↵select
X-rite 331	
X-rite 341	

- 5 Press the Up/Down key to select the default densitometer.
- 6 Press the Confirm key to store the data, or the Escape key to quit the procedure without any changes.



All shown densities will vary slightly according to the densitometer selection.

Changing Image quality setting for a modality - Selecting a lookup table

- 1 Perform steps 1 and 2 of the '[Accessing the Change settings menu](#)' procedure on page 57.
- 2 On the 'Change settings' screen, press the Down key four times, followed by the Confirm key to select 'Image quality'.

The following screen will appear:

1 General	Key-operator
2 <Modality name>	Image quality
3 <Modality name>	
4 <Modality name>	
	X quit
	Y ok
	↵select

- 3 Press the Up/Down key to select the modality for which you want to change the image quality settings, and press the Confirm key.

The 'Image quality' screen for the selected modality is displayed:

for :<Modality name> IMAGE QUALITY	Key-operator Per Mod. Set.
1 Profile_default	X quit
2 select_other	Y ok
	↵select

- 4 Do one of the following:
 - If you want to attribute the default profile, select 'Profile default' and press the Confirm key.
You return to the screen of step 2.
 - If you want to add a custom profile, select 'Select other' and press the Confirm key.
Proceed with step 5.
- 5 The 'Image quality' screen for the selected modality is displayed:

for :<Modality name> IMAGE QUALITY	Key-operator Per Mod. Set.
1 Look-up table	X quit
2 Interpolation	Y ok
3 Dmax	↵select

6 Press the Confirm key to select ‘Look-up table’.

The ‘Lookup table’ screen is displayed:

for :<Modality name> LOOK-UP TABLE	Key-operator Per Mod. Set.
1 Kanamori 2 Linear 3 Kanamori-like (100)	X quit Y ok ↵select

7 Press the Up/Down key to select the desired lookup table.

8 Press the Confirm key to store the data, or the Escape key to quit the procedure without any changes.

◆ In case Kanamori-like is selected, change the Kanamori-value.

An additional screen for the Kanamori-like value is displayed:

for :<Modality name> IMAGE QUALITY	Key-operator Per Mod. Set.
Enter Kanamori-like value 100 ---	X quit Y ok ↵select ⇄change

All Kanamori-like curves are selectable starting from 75 until 220 in steps of 1 unit.



In case a number of settings for a modality were set via a remote computer, you will not be able to change the image quality information for this modality manually. If this is the case, the following screen will appear:

for :<Modality name> IMAGE QUALITY	Key-operator Per Mod. Set.
CONFIGURED WITH PREDEFINED MODALITY SETTINGS	✓ ok
NOT ALLOWED TO CHANGE	



In case the image quality parameters need to be changed for this modality, please use the DICOM Configuration tool, in the specialist mode on the remote PC. You can also delete this modality (refer to ‘[Removing a modality](#)’ on page 80) and create a new modality with the same name. For this new modality new parameters can be assigned via the local keypad.

Changing Image quality setting for a modality - Changing the Interpolation

- 1 Perform steps 1 and 2 of the '[Accessing the Change settings menu](#)' procedure on page 57.
- 2 On the 'Change setting' screen, press the Down key four times, followed by the Confirm key to select 'Image quality'.

The following screen will appear:

1 General	Key-operator
2 <Modality name>	Image quality
3 <Modality name>	
4 <Modality name>	
	X quit
	Y ok
	↵select

- 3 Press the Up/Down key to select the modality for which you want to change the image quality settings, and press the Confirm key.

The 'Image quality' screen for the selected modality is displayed:

for :<Modality name>	Key-operator
IMAGE QUALITY	Per Mod. Set.
1 Profile_default	X quit
2 select_other	Y ok
	↵select

- 4 Do one of the following:
 - If you want to attribute the default profile, select 'Profile default' and press the Confirm key.
 - If you want to add a custom profile, select 'Select other' and press the Confirm key. Proceed with step 5.
- 5 The 'Image quality' screen for the selected modality is displayed:

for :<Modality name>	Key-operator
IMAGE QUALITY	Per Mod. Set.
1 Look-up table	X quit
2 Interpolation	Y ok
3 Dmax	↵select

- 6 On the 'Image quality' screen, press the Down key, followed by the Confirm key to select 'Interpolation'.

The 'Interpolation' screen is displayed:

for :<Modality name> INTERPOLATION	Key-operator Per Mod. Set.
1* CubicBell	X quit
2 Cubic Hi-Res	Y ok
3 Linear	→ select
4 Replication	↵ change
5 None	

The current interpolation setting for the selected modality is marked with an *.

- 7 Press the Up/Down key to select the desired Interpolation setting for this modality.

- ◆ If you select "Cubic Hi-Res" the following screen will appear, allowing you to adjust the smoothing factor:

for :<Modality name> INTERPOLATION	Key-operator Per Mod. Set.	
Enter smoothing factor: valid range [-5.00,0.00]	X quit	
.00	Y ok	
↵ select	↵ select	Default 0.70
(enter absolute value)	↵ change	

- ◆ If you select "Cubic Bell" the following screen will appear, allowing you to adjust the smoothing factor:

for :<Modality name> INTERPOLATION	Key-operator Per Mod. Set.	
Enter smoothing factor: [0.10, 1.00]	X quit	
.00	Y ok	
↵ select	↵ select	Default 0.90
↵ change	↵ change	

- 8 Press the Confirm key to store the data, or the Escape key to quit the procedure without any changes.



The user should be aware that the interpolation values differ when the A#Sharp feature is deactivated. The A#Sharp feature, which is a technology that enhances the image sharpness, is active by default. For more information about (de)activating the A#Sharp feature, refer to the Drystar 4500 Service manual.

Changing Image quality setting for a modality - Changing the maximum density (Dmax)

- 1 Perform steps 1 and 2 of the '[Accessing the Change settings menu](#)' procedure on page 57.
- 2 On the 'Change setting' screen, press the Down key four times, followed by the Confirm key to select 'Image quality'.

The following screen will appear:

1 General	Key-operator
2 <Modality name>	Image quality
3 <Modality name>	
4 <Modality name>	
	X quit
	Y ok
	↵select

- 3 Press the Up/Down key to select the modality for which you want to change the image quality settings, and press the Confirm key.

The 'Image quality' screen for the selected modality is displayed:

for :<Modality name>	Key-operator
IMAGE QUALITY	Per Mod. Set.
1 Profile_default	X quit
2 select_other	Y ok
	↵select

- 4 Do one of the following:
 - If you want to attribute the default profile, select 'Profile default' and press the Confirm key.
 - If you want to add a custom profile, select 'Select other' and press the Confirm key. Proceed with step 5.
- 5 The 'Image quality' screen for the selected modality is displayed:

for :<Modality name>	Key-operator
IMAGE QUALITY	Per Mod. Set.
1 Look-up table	X quit
2 Interpolation	Y ok
3 Dmax	↵select

- 6 On the ‘Image quality’ screen, press the Down key twice, followed by the Confirm key to select ‘Dmax’.

The ‘Dmax (maximum density)’ screen is displayed:

<Modality name>		Key-operator
Dmax (MAXIMUM DENSITY)		Per Mod. Set.
*2.80		X quit
2.85		Y ok
2.90		↑ select
2.95		



The listed densities are densities of the default densitometer.

All maximum densities are selectable starting from 2.75 until 3.90 in steps of 0.05 units. The activated setting is marked with an *.



The maximum density will be limited to the maximum density of the media.

- 7 Press the Up/Down key to select the desired maximum density setting (the target density is 2.80) for this modality.
- 8 Press the Confirm key to store the data, or the Escape key to quit the procedure without any changes.

Printing images

A number of ‘test’ images can be printed, either from floppy disk or from the hard disk:

Show settings	Page
Hard disk	
<i>‘Printing test images from the hard disk’</i>	94
Floppy disk	
<i>‘Printing files from a floppy disk’</i>	96
Other images	
<i>‘Printing other images’</i>	98

Accessing the Print images menu

- 1 Press the Key-operator key to enter the key-operator mode.
- 2 On the key-operator main menu, press the Down key twice followed by the Confirm key to select ‘Print image’.

The Print image menu is displayed:

1 Test image	Key-operator
2 From floppy	Print image
	X quit
	Y ok
	↵ select



This menu is the starting point for test image printing (see below).

- 3 Press the Escape key to return to the key-operator main menu.
- 4 Press the Escape key to quit the key-operator mode.

Printing test images from the hard disk

Test images are useful for checking the print quality. The Drystar 4500 offers a number of built-in test images stored on the hard disk.

- 1 Perform steps 1 to 2 of the [‘Accessing the Print images menu’](#) procedure on page 93 to select the ‘Print image’ screen.

- 2 On the ‘Print image’ menu, press the Confirm key to select ‘Test image’.

The ‘Select test image’ screen is displayed:

SELECT test image	Key-operator Print image
1 smpte.tif	
2 smpte_kan.tif	X quit
3 smpte_300.tif	Y ok
4 smpte_ls.tif	↵select

- 3 Press the Up/Down arrow keys to select the desired test image, followed by the Confirm key.

- 4 Define the input tray for printing.

The ‘Select input tray’ screen is displayed:

SELECT input tray	Key-operator Print image
Upper input tray	
Lower input tray	X quit
	Y ok
	↵select

- 5 Press the Up/Down arrow keys to select the desired input tray, followed by the Confirm key.

The ‘Number of copies’ screen is displayed:

Number of copies :	Key-operator Print image
1	
	X quit
	Y ok
	↵select
	↵change

- 6 Press the arrow keys to increment/decrement the number. Press the Left/Right key to move through the field.



For more info, refer to [‘Data entry’](#) on page 25.

7 Press the Confirm key to confirm the number of copies.


The 'Copying and Queuing file' screen will be shown to indicate to the operator that the printing action from floppy is accepted and in process:

COPYING and QUEUEING FILE	Key-operator Print image
<filename>	
Please wait	

After about five seconds this screen will disappear.

Printing files from a floppy disk

TIFF images stored on a floppy disk can be printed using the ‘Print from floppy’ function.

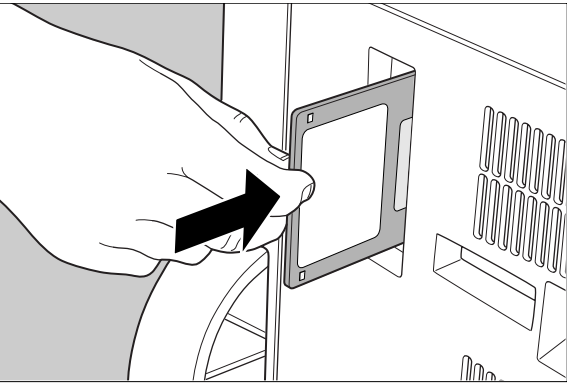
 No compressed TIFF-files are allowed.

- 1 Perform steps 1 to 2 of the ‘*Accessing the Print images menu*’ procedure on page 93 to select the ‘Print image’ screen.
- 2 On the Print image menu, press the Down key once, followed by the Confirm key to select ‘From floppy’.

The ‘Print from floppy’ screen is displayed:

PRINT FROM FLOPPY	Key-operator Print image
INSERT FLOPPY DISK	X quit Y ok

- 3 Insert the floppy disk containing the TIFF file(s) you want to be printed.
The drive is located at the rear of the printer.






- 4 Press the Confirm key to continue, or the Escape key to quit.
The ‘Select image-file’ screen is displayed:

SELECT IMAGE FILE	Key-operator Print image
1 SMPTE.tif 2 TPA.tif 3 Test1.tif	X quit Y ok ↓select

- 5 Press the Up/Down arrow keys to select the desired TIFF-file, followed by the Confirm key.





- 6 Define the input tray for printing.

The 'Select input tray' screen is displayed:

SELECT input tray	Key-operator Print image
Upper input tray	 quit  ok  select
Lower input tray	

- 7 Press the Up/Down arrow keys to select the desired input tray, followed by the Confirm key.

The 'Number of copies' screen is displayed:

Number of copies :	Key-operator Print image
1	 quit  ok  select  change

- 8 Press the arrow keys to increment/decrement the number. Press the Left/Right key to move through the field.




For more info, refer to 'Data entry' on page 25.

- 9 Press the Confirm key to confirm the number of copies.

The 'Copying and Queuing file' screen will be shown to indicate to the operator that the (printing) action is accepted and in progress:

COPYING and QUEUEING FILE	Key-operator Print image
<filename>	
Please wait	

After about 20 seconds the following screen appears:

PRINT FROM FLOPPY	Key-operator Print image
REMOVE THE FLOPPY FROM THE FLOPPY DRIVE	 ok

- 10 Remove the floppy disk from the drive and press the Confirm key to continue.
The print job is stored in the print queue.

Printing other images

When accessing key-operator mode via a connected remote pc, you can print more images, for example images that are on the remote pc. Refer to [‘Starting the remote session’](#) on page 155.

Saving the configuration settings

Each time the settings have been changed and confirmed, an automatic back-up of the new configuration is made on the hard disk. You will also be asked to create a back-up floppy.

It is also possible (and recommended) to regularly make a back-up of the printer settings to ensure safe restoring of the values when required.

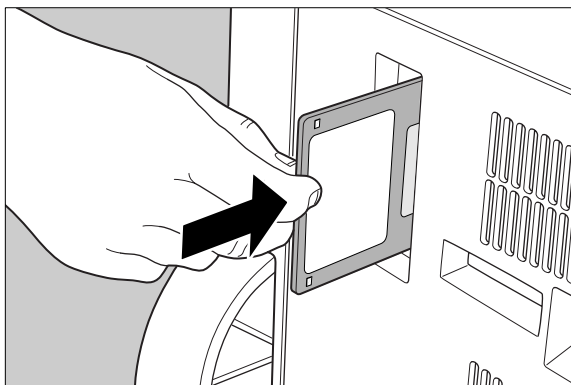
Save configuration procedure

- 1 Press the Key-operator key to enter the key-operator mode.
- 2 On the key-operator main menu, press the Down key three times, followed by the Confirm key to select 'Save configuration'.

The 'Save configuration' screen is displayed:

SAVE CONFIGURATION	Key-operator
Insert the backup floppy	Save Config.
	<input checked="" type="checkbox"/> quit
	<input type="checkbox"/> continue

- 3 Insert an empty floppy disk.
- The drive is located at the rear of the printer.



An empty, formatted and IBM-compatible (2HD) floppy disk is required.

- 4 Press the Confirm key to continue.

The 'Save configuration' screen is displayed.

```

                SAVE CONFIGURATION

Copying...
D: /<path><filename>
  To
A: /<path><filename>

                Please wait
    
```

The printer saves the configuration on the floppy disk.

The following screen is displayed:

SAVE CONFIGURATION Remove the floppy from the floppy drive	Key-operator Save Confis. <input checked="" type="checkbox"/> confirm
--	---

- 5 Remove the floppy disk and press the Confirm key.

The following screen is displayed:

```

                SAVE CONFIGURATION

Label floppy with data :
"Backup floppy"
"Serial number : | "
"Date and time : | "

                Press / to continue
    
```

e.g.
1012
18-JAN-2005 11:07:18

- 6 Press the Confirm key. The program will return to the main key operator menu.

Restoring the configuration settings

When necessary, you can restore the configuration settings of the printer from a previously made back-up copy.

The following functions are provided for restoring a back-up copy of the configuration files:

- *'Restoring printer settings from the back-up floppy disk'* (page 102).
- *'Restoring printer settings from the hard disk'* (page 104).

Accessing the restore configuration menu

- 1 Press the Key-operator key to enter the key-operator mode.
- 2 On the Key-operator main menu, press the Down key four times, followed by the Confirm key to select 'Restore configuration'.

The 'Restore configuration' screen is displayed:

RESTORE CONFIGURATION		Key-operator Rest. Configs.
1	From floppy (recommend)	
2	Settings 10/05/02 10:55	X quit
3	Settings 08/05/02 08:05	Y ok
4	Settings 08/05/02 07:45	↓select
5	Settings 08/05/02 07:31	



For the back-up, an empty floppy disk is required (formatted, IBM-compatible, 2HD).

This menu is the starting point for restoring printer settings (see below).

- 3 Press the Escape key to return to the key-operator main menu.
- 4 Press the Escape key to quit the key-operator mode.

Restoring printer settings from the back-up floppy disk

- 1 Perform steps 1 to 2 of the '[Accessing the restore configuration menu](#)' procedure on page 101 to select the 'Print image' screen:
- 2 Press the Confirm key in the 'Restore configuration' screen to select 'From floppy (recommended)'.

The following screen is displayed:

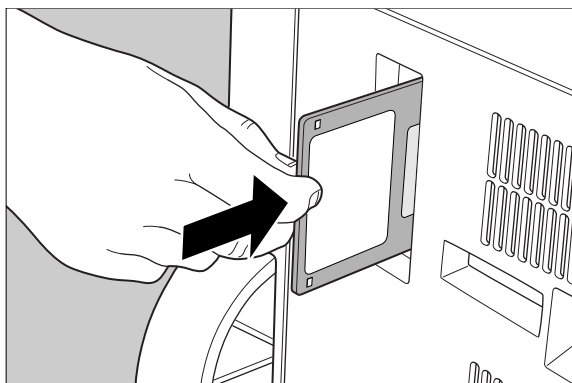
RESTORE CONFIGURATION Insert backup floppy	Key-operator Rest. Config. <input checked="" type="checkbox"/> quit confirm
---	--

- 3 Insert the floppy disk which contains a back-up of the printer settings.



Make sure that you insert the correct floppy disk, containing the printer settings you want to restore.

The drive is located at the rear of the printer.



- 4 Press the Confirm key to continue.

The following screen is displayed.

RESTORE CONFIGURATION <type of information> Copying... A: /<path><filename> To D: /<path><filename> Please wait

The printer restores the configuration on the hard disk.

The following screen is displayed.

RESTORE CONFIGURATION	Key-operator Rest. Confis.
Remove the floppy from the floppy drive	✓ confirm

- 5 Remove the floppy disk.
- 6 Press the Confirm key to continue.

The following screen is displayed.

RESTORE CONFIGURATION	Key-operator Rest. Confis.
New settings will be active after reset	✗ quit ✓ reset

- 7 Reset the printer by pressing the Confirm button.
- 8 Switch the printer on to resume work by following the procedure as described in *'Switching on the Drystar 4500'* on page 26.

Restoring printer settings from the hard disk

- 1 Perform steps 1 to 2 of the [‘Accessing the restore configuration menu’](#) procedure on page 101 to select the ‘Print image’ screen:

RESTORE CONFIGURATION	Key-operator Rest. Config.
1 From floppy (recommend)	
2 Settings 10/05/02 10:55	X quit
3 Settings 08/05/02 08:05	Y ok
4 Settings 08/05/02 07:45	↓select
5 Settings 08/05/02 07:31	

- 2 Press the Up/Down key in the ‘Restore configuration’ screen to select the required printer settings from the hard disk, followed by the Confirm key. The following screen is displayed.

UPDATE BACKUP FLOPPY ?	Key-operator Rest. Config.
yes	Y ok
no	↓select

If you want to restore the configuration on the back-up floppy, select ‘yes’ and press the Confirm key. The printer will now enter the [‘Save configuration procedure’](#) (see page 99).

If you only want to restore the configuration on the printer’s hard disk, select ‘no’ and press the Confirm key.

After the restore operation, the following screen is displayed.

RESTORE CONFIGURATION	Key-operator Rest. Config.
New settings will be active after reset	X quit Y reset

- 3 Reset the printer by pressing the Confirm button.
- 4 Switch the printer on to resume work by following the procedure as described in [‘Switching on the Drystar 4500’](#) on page 26.

Performing the calibration procedures

Accessing the Calibration menu

- 1 Press the Key-operator key to enter the Key-operator mode.
- 2 Press the Down key five times, followed by the Confirm key to select 'Calibration'.

1 Show settings	Key-operator
2 Change settings	Main menu
3 Print image	
4 Save configuration	X quit
5 Restore configuration	Y ok
6 Calibration	↵select
7 Installation	
8 Quality Control	

The 'Select Calibration' screen appears:

SELECT CALIBRATION	Key-operator
1 Film	Calibration
2 Printhead profile	X quit
3 Printhead cleaning	Y ok
	↵select



In case the printer is in printing mode, a screen will be presented that the calibration cannot be done now, but has to be reactivated later.

film 0 of 0 0%
Please wait
Finishing current print job

- 3 Press the Escape key to return to the key-operator main menu.
- 4 Press the Escape key to quit the key-operator mode.

Film calibration

The film calibration combines Dmax and sensitometry calibration and is activated as one single procedure. Separate Dmax and sensitometry calibration steps are not required.

For more general information on maintaining image quality, refer to [‘Maintaining image quality and resolving image quality problems’](#) on page 191.



In the procedure, we will assume a film calibration on the upper input tray. The procedure for the lower input tray is identical.

- 1 Perform steps 1 to 2 of the [‘Accessing the Calibration menu’](#) procedure on page 105 to select the ‘Calibration’ screen.

- 2 Press the Confirm key to select ‘Film’.

The ‘Select input tray’ screen appears:

SELECT input tray	Key-operator Print image
Upper input tray	
Lower input tray	X quit Y ok ↓select

- 3 Press the Up/Down arrow keys to select the proper input tray, followed by the Confirm key.

The ‘Film calibration in progress’ screen appears:

Film calibration in progress
<div><div></div></div> 0%
Please wait

The counter indicates the progress of the calibration process. The calibration film is measured automatically by the built-in MDM (Macro Densitometer). The Drystar 4500 is being calibrated during the printing process.

- 4 In case the film calibration has failed (in this case from upper input tray), the following message will appear.

Film calibration from upper input tray	
Failed	Blinking
Please retry	Blinking
Press / to continue	

Press the Confirm key to retry the calibration.

5 When the film calibration has completed successfully, three cases are possible:

- Calibration successful, results OK.

The obtained Dmax (x.xx) after calibration is displayed:

<pre>Film calibration from upper input tray Completed successfully DMax = x.xx Press / to continue</pre>	<p>Blinking</p> <p>Default Densitometer e.g. Macbeth TR924</p>
--	--

- Calibration successful, but Dmax differs more than 2% from the target value.

The obtained Dmax (x.xx) after calibration is displayed:

<pre>Film calibration from upper input tray Completed successfully DMax = x.xx Press / to continue</pre>	<p>Blinking</p> <p>Default Densitometer e.g. Macbeth TR924</p>
--	--

- Calibration successful, but the maximum density has been reached.

The obtained Dmax (x.xx) after calibration is displayed:

<pre>Film calibration from upper input tray Completed successfully DMax = x.xx Press / to continue</pre>	<p>Blinking</p> <p>Default Densitometer e.g. Macbeth TR924</p>
--	--

6 Press the Confirm key to return to the Calibration menu.



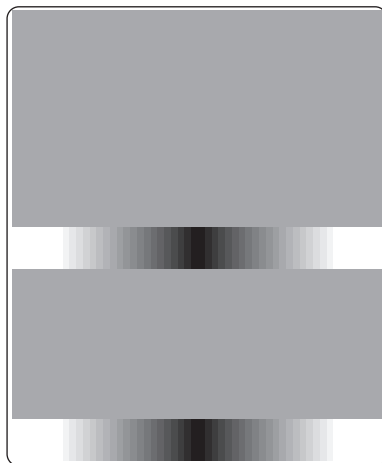
When the calibration process is interrupted, you will have to start the calibration procedure again. Otherwise, the old calibration parameters will be used.

7 Check the printed test film.

The test film must be similar to the image below.



8x10"



10x12"



The calibration film must be free of dust particles or any other artifacts. If this is not the case, clean the print head and restart the calibration procedure.

Density response of Drystar media

Different densitometers can give different results for measuring the same density area. This is due to spectral differences between the densitometers.

The density values used in this manual are based on the Macbeth TR924 densitometer. Values measured with another densitometer can vary from these values.

Non-calibrated or badly calibrated densitometers can result in even larger differences.

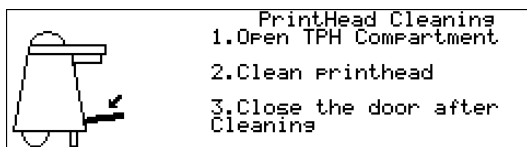
To give the user an idea of the differences given by the most frequently used densitometers, you can find the measurements for an SMPTE pattern on the Drystar DT 1 B and Drystar DT 1 C films in Appendix B.

Print head cleaning

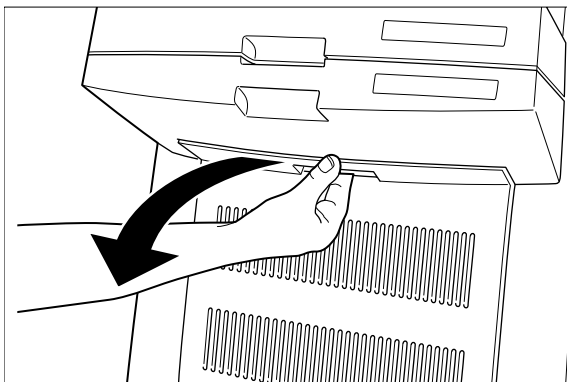


Print head cleaning must be done when image quality problems occur. For more information on maintaining image quality, refer to *'Maintaining image quality and resolving image quality problems'* on page 191.

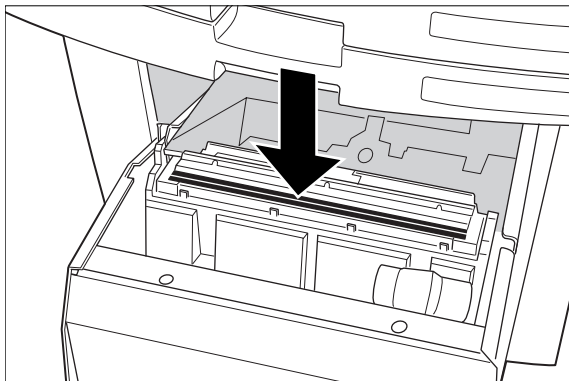
- 1 Perform steps 1 to 2 of the *'Accessing the Calibration menu'* procedure on page 105 to select the 'Calibration' screen.
- 2 Press the Down key two times to select 'Print head cleaning' and press the Confirm key. The printer will automatically shut down.
- 3 The 'Print head cleaning' screen will give instructions on what to do:



- 4 Open the front cover by pulling its handle.

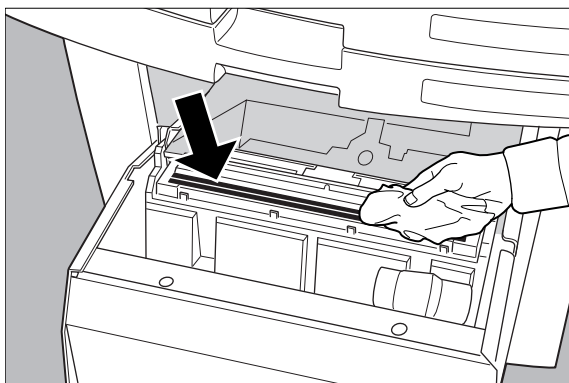


- 5 Locate and check on sight the print head resistor line.



Be careful not to touch the print head resistor line.

- 6 Clean the print head resistor line.



Gently pass over the resistor line a few times with a lint free cloth slightly moistened with Isopropyl alcohol or Ethanol. **Do this in only one direction, i.e. from left to right, without lifting the cloth.**



Do not apply any pressure on the print head because this pressure may cause damage on the interconnections underneath the print head.

- 7 Close the front cover.
- 8 After you have cleaned the print head resistor line and closed the door, the printer will continue.

Print head profile calibration



Print head profile calibration must be done when image quality problems occur. For more information on maintaining image quality, refer to *'Maintaining image quality and resolving image quality problems'* on page 191.

- 1 Perform steps 1 to 2 of the *'Accessing the Calibration menu'* procedure on page 105 to select the 'Calibration' screen.
- 2 Press the Down key once to select 'Print head profile calibration', and press the Confirm key.

The 'Select input tray' screen appears:

SELECT input tray	Key-operator Print image
Upper input tray	
Lower input tray	X quit Y ok ↵select

- 3 Press the Up/Down arrow keys to select an input tray.
- 4 Press the Confirm key if you want to start the calibration.

The system will start with Phase 1 of the calibration, registration:

PrintHead Profile calibration Phase 1 : Resistration Resistration in progress [Progress bar] 0% Please wait

After registration, the system will continue with Phase 2 of the calibration, the print head profile:

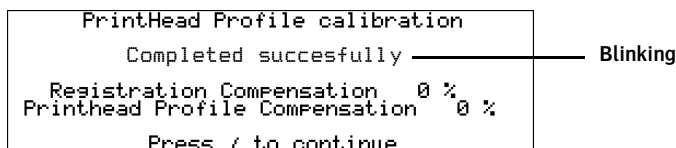
PrintHead Profile calibration Phase 2 : Printhead Profile TPH profile calibration in progress [Progress bar] 0% Please wait

- 5 In case the print head profile calibration has failed, the following message will appear:

PrintHead Profile calibration Failed [Blinking bar] Blinking Please Retry Press X to quit Press / to retry
--

Press the Confirm key to retry the calibration, or the Escape key to quit.

- 6 In case the film calibration has completed successfully, the following message is displayed:



The percentage for the 'Registration compensation' reflects the degree to which the system had to compensate for incorrect horizontal positioning of the built-in densitometer (100% compensation = maximal correction).

The percentage for the 'Print head profile compensation' reflects the degree to which the system had to compensate for density variations in the Print head profile (100% compensation = maximal correction).

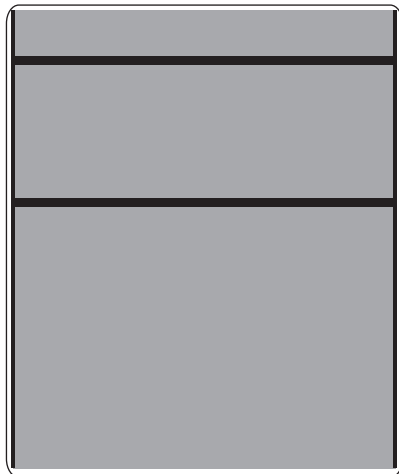
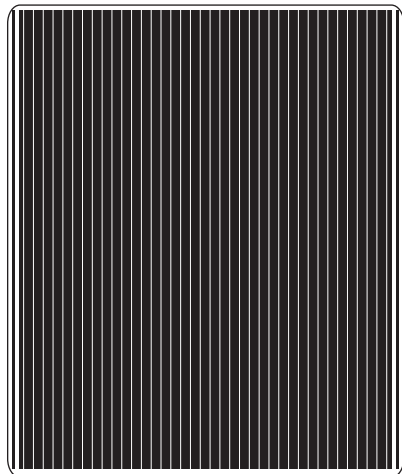
Both values are important for the service technician.



When the calibration process is interrupted, you will have to start the calibration procedure again. Otherwise, the old calibration parameters will be used.

- 7 Check the printed test films.

The test films must be similar to the images below (lay-out can differ depending on the printed format).



Remark: the calibration film must be free of dust particles or any other artifacts. If this is not the case, you must restart the calibration procedure.



If the printed test film does not look similar to the image above, repeat the print head profile calibration until the result is satisfactory.

Installation

Upgrading the software

It is possible to install new software or new software components from a floppy disk onto the hard disk.

Different software (components) can be installed:

- language files,
- modality specific files,
- output LUT,
- calibration files,
- ...

The new software will be activated after the Installation procedure. The previously installed software components will be automatically removed when installing new software or new data.

- 1 Press the Key-operator key to enter the key-operator mode.
- 2 On the Key-operator main menu, press the Down key six times, followed by the Confirm key to select 'Installation'.

The 'Installation' screen will be displayed:

1 Install data-sets	Key-operator
2 Printer install. wizard	Installation
	X quit
	Y ok
	↓ select

3 Press the Confirm key to select ‘Install data-sets’.



Before the procedure starts, the system suggests you to update your back-up copy of the current configuration. It is highly recommended to do this, so you can always restore it in case something should go wrong.

The following screen is displayed:

INSTALL DATA-SETS	Key-operator
Before installing data	Installation
Please update your backup	skip
	ok



If you do not wish to update your back-up copy, press the Escape key and go to [step 10](#).

4 Press the Confirm key to continue.

The following screen is displayed:

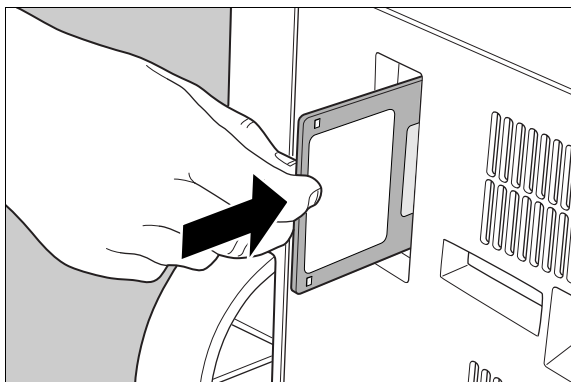
SAVE CONFIGURATION	
<div><div></div></div>	0%
Please wait	

5 After saving, the printer asks you to insert the back-up floppy.

SAVE CONFIGURATION	Key-operator
Insert the backup floppy	Save Confis.
	quit
	continue

6 Insert the back-up floppy disk.

The drive is located at the rear of the printer.



7 Press the Confirm key to continue.

The following screen is displayed:

```

      SAVE CONFIGURATION

Copying...
D: /<path><filename>
  To
A: /<path><filename>

      Please wait
    
```

The printer saves the configuration on the floppy disk.

When the writing process has finished, the following screen is displayed:

<pre> SAVE CONFIGURATION Remove the floppy from the floppy drive </pre>	<pre> Key-operator Save Config. ✓ confirm </pre>
--	---

8 Remove the floppy disk and press the Confirm key.

The following screen is displayed:

<pre> SAVE CONFIGURATION Label floppy with data : "Backup floppy" "Serial number : " "Date and time : " Press / to continue </pre>	<p>e.g. 1012 18-JAN-2005 11:07:18</p>
--	---

9 Press the Confirm key.

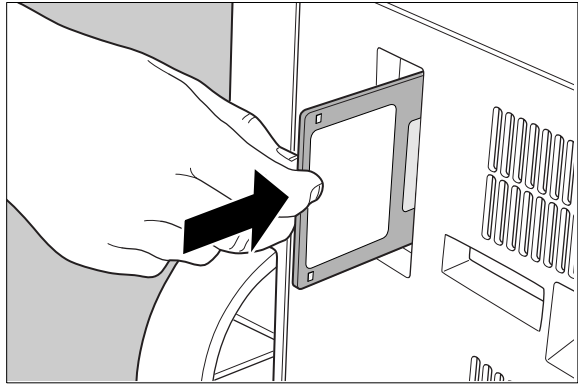
The backup is finished and the system will now proceed with the actual upgrade.

10 The ‘Install data-sets’ screen is displayed:

INSTALL DATA-SETS Insert the first floppy	Key-operator Installation X quit continue
--	--

11 Insert the (first) floppy disk.

The drive is located at the rear of the printer.



12 Press the Confirm key to continue.

The following screens appear successively:

INSTALL DATA-SETS Checking the volume label...	Key-operator Installation
--	------------------------------

INSTALL DATA-SETS ()	Key-operator Installation
Install from floppy ?	X quit ok

Print head data



In case a wrong disk has been inserted, the following message is displayed:

INSTALL DATA-SETS	Key-operator Installation
WRONG FLOPPY INSERTED ! Insert the first floppy	<input checked="" type="checkbox"/> quit <input checked="" type="checkbox"/> continue



In case no floppy has been inserted, the following message is displayed:

FLOPPY HANDLING ERROR	ERROR
No floppy detected	<input checked="" type="checkbox"/> ok

- 13** Press the Confirm key to continue, or the Escape key to quit.

The printer will copy the new software data onto the hard disk.

INSTALL DATA-SETS
Copying... A: /<path><filename> To D: /<path><filename> Please wait

- 14** When the contents of the floppy is copied onto the hard disk, the following message asks you to insert the next floppy:

INSTALL DATA-SETS	Key-operator Installation
Insert the floppy : Disk x/y	<input checked="" type="checkbox"/> quit <input checked="" type="checkbox"/> confirm

Print head data

- 15** Remove the floppy disk and insert the next floppy disk ('disk x/y') when necessary. Press the Confirm key to continue.

INSTALL DATA-SETS
Copying... A: /<path><filename> To D: /<path><filename> Please wait

The printer will copy the new software data onto the hard disk.

- 16** Repeat steps 14 and 15 until all floppy disks have been copied onto the hard disk.

When all the files have been copied from the last floppy disk, the following screen is displayed:

INSTALL DATA-SETS	Key-operator Installation
Remove the floppy from the floppy drive	✓ confirm

- 17** Remove the last floppy disk and press the Confirm key.

In case the software requires a reset, the following screen will be displayed:

INSTALL DATA-SETS	Key-operator Installation
Installation finished New software will be active after reset	X quit ↓ reset

- 18** Press the Confirm key to reset the printer.

In case the software requires no reset, the following screen will be displayed:

INSTALL DATA-SETS	Key-operator Installation
Installation finished	X quit ↓ continue

- 19** Press the Confirm key to continue. You will return to the 'Installation' screen.

1 Install data-sets	Key-operator Installation
2 Printer install. wizard	X quit ↓ ok ↓ select

Using the installation wizard



In case the display software has been updated (e.g. when installing language files), the 'Updating display software' screen is displayed during the downloading of the display software:

When you install the Drystar 4500, the installation wizard will guide you through the complete installation procedure.

The Installation wizard consists of four steps:

- *'Entering consumable information'* (page 122),
- *'Entering the printer network settings'* (page 125),
- *'Entering modality-specific settings'* (page 129),
- *'Saving the configuration'* (page 132).

When you have entered the required data, the installation is complete.



Although the Installation wizard consists of four separate steps, these steps cannot be performed separately.



*To change the settings once the installation has completed, refer to *'Changing the configuration settings'* on page 56.*

Starting the Installation wizard

- 1 Press the Key-operator key to enter the key-operator mode.
- 2 On the Key-operator main menu, press the Down key seven times, followed by the Confirm key to select 'Installation'.

The 'Installation' screen will be displayed:

1 Install data-sets	Key-operator
2 Printer install. wizard	Installation
	X quit
	Y ok
	↓select

- 3 Press the Down key once, followed by the Confirm key to select 'Printer instal. wizard'.

The 'Select language' screen is displayed:

SELECT LANGUAGE	Key-operator
1*English	Installation
2 Français	X quit
3 Deutsch	Y ok
4 Italiano	↓select
5 Nederlands	
(*) Automatic reboot	



The number of displayed languages depends on the installed dataset. Contact your local Agfa service organization for the latest Drystar 4500 language availability status.

- 4 Press the Up/Down arrow keys to select the desired language, followed by the Confirm key.

The 'Set date and time' screen is displayed:

SET DATE AND TIME	Key-operator
5-JAN-2005 16:21:33	Installation
dd-mm-yyyy hh:mm:ss	X quit
	Y ok
	↓select
	↑change

- 5 Press the Up/Down arrow keys to increment/decrement the numbers. Press the Left/Right arrow keys to move through the fields. Press the Confirm key to store the data.



Refer to 'Data entry' on page 25.

The 'Printer installation wizard' screen will appear:

PRINTER INSTALLATION WIZARD

This wizard will guide you step by step
through the installation procedure

READ THE INSTRUCTIONS CAREFULLY!!

Press / to continue

—Blinking

- 6 Press the Confirm key to continue.

A screen with information on the sequence of the steps will appear:

THE INSTALLATION IS DIVIDED INTO 4

1. Consumable settings
2. Printer network settings
3. Host-specific settings
4. Save configuration

Press / to start with the first step

Press X to quit this procedure

- 7 Press the Confirm key to start with the first step or press the Escape key to quit the procedure.

Entering consumable information

After having confirmed to start with the first step of the installation wizard, the 'Upper tray Film type' screen is displayed:

```

SELECT THE FILM TYPE THAT YOU WANT TO USE
IN THE UPPER INPUT TRAY :

                DRYSTAR DT 1 B
                DRYSTAR DT 1 C

X go back    ✓ ok    ↑↓select
    
```



You can find the film type on the film packaging. The label may show some additional characters after the film type, e.g. 'DRYSTAR DT 1 C'. Those characters are not relevant for the printer settings, and you can ignore them.

- 1 Press the Up/Down arrow keys to select the desired film type for the upper input tray.
- 2 Press the Confirm key to continue, or the Escape key to return to the previous step.

The 'Lower tray Film type' screen is displayed:

```

SELECT THE FILM TYPE THAT YOU WANT TO USE
IN THE LOWER INPUT TRAY :

                DRYSTAR DT 1 B
                DRYSTAR DT 1 C

X go back    ✓ ok    ↑↓select
    
```



You can find the film type on the film packaging. The label may show some additional characters after the film type, e.g. 'DRYSTAR DT 1 C'. Those characters are not relevant for the printer settings, and you can ignore them.

- 3 Press the Up/Down arrow keys to select the desired film type for the lower input tray.
- 4 Press the Confirm key to continue, or the Escape key to return to the previous step.

The 'Film format' screen will appear:

```

SELECT THE FILM-SIZE OF THE LOWER INPUT
TRAY :

                10x12"
                8x10"

X go back    ✓ ok    ↑↓select
    
```

- 5 Press the Up/Down arrow keys to select the desired film format for the lower input tray. Press the Confirm key to continue, or the Escape key to return to the previous step.

The 'Film view' screen for the upper tray is displayed:

SELECT THE FILM-POSITION ON THE LIGHTBOX IN UPPER TRAY :		
Normal Back		
X go back	✓ ok	↑↓select

- 6 Press the Up/Down arrow keys to select the desired film view for the upper input tray.
- 7 Press the Confirm key to continue, or the Escape key to return to the previous step.

After you have selected the film view for the upper tray, you can select the film view for the lower input tray in the same way:

SELECT THE FILM-POSITION ON THE LIGHTBOX IN LOWER TRAY :		
Normal Back		
X go back	✓ ok	↑↓select

- 8 Press the Up/Down arrow keys to select the desired film view for the lower input tray.
- 9 Press the Confirm key to continue, or the Escape key to return to the previous step.

A screen will appear summarizing the information you have entered:

FOLLOWING SETTINGS ARE ENTERED :	
Upper tray:	Lower tray:
DRYSTAR DT 1 B	DRYSTAR DT 1 C
8 x 10"	10 x 12"
Back view	Normal view
X Repeat step 1	✓ continue

- 10 Press the Confirm key to continue, or the Escape key to return to repeat step 1. In case the film format has been changed, the following screen will appear:

MODIFY THE LOWER INPUT TRAY FOR :
<new film format>
Press / to confirm modification

- 11** Perform the mechanical modification as described in '*Changing the film format of the lower tray*' on page 162. Press the Confirm key to confirm the modification.

The following screen will appear:

```
First installation step is finished.  
Proceed with the 2 step :  
2. Printer network settings  
  
Press / to continue
```

- 12** Press the Confirm key to continue.

Entering the printer network settings

An instruction screen will show the information you need to complete this part of the installation:

```
For this step, you need following info:
PRINTER IP-ADDRESS
NETMASK          (in case of subnets)
ROUTER IP-ADDRESS (in case of subnets)
CALLED AE-TITLE   (= "printer-name")
HOSTNAME
Ask the network-manager for this info.
Press / to continue
```

- 1 Press the Confirm key to continue.

The 'Enter printer IP-address' screen is displayed:

```
ENTER PRINTER IP-ADDRESS :
      _ 0 . 0 . 0 . 0 _
      _ _ _ _ _
X so back ✓ ok      ↔select ↑↓change
```

e.g. 10.233. 93. 46

If the IP-address has already been assigned, it will be shown on the display.



When no DHCP server is available and when the IP address of the printer has never been set, the printer IP address will be set to the APIPA address 169.254.10.10.

- 2 Press the Up/Down arrow keys to increment/decrement the numbers. Press the Left/Right arrow keys to move through the fields.



Refer to 'Data entry' on page 25.



Note that blank spaces will not be filled in.

Example: If the IP-address is 120.000.120.120, then the data entry should be as follows:

```
ENTER PRINTER IP-ADDRESS :
      120.000.120.120
      _ _ _ _ _
X so back ✓ ok      ↔select ↑↓change
```

Example: If the IP-address is 120.0.120.120, then the data entry should be as follows:

ENTER PRINTER IP-ADDRESS :	
120.	0.120.120
Only necessary in case of subnets!!	
X go back ✓ ok	↔select ↑↓change

- 3 Press the Confirm key to continue, or the Escape key to return to the previous step.

The 'Enter Netmask' screen is displayed:

ENTER NETMASK :		
0.	0.	e.g. 255.255.252. 0
Only necessary in case of subnets!!		Blinking
X go back ✓ ok	↔select ↑↓change	

If the netmask has already been assigned, it will be shown on the display.



When no DHCP server is available and when the subnet mask of the printer has never been set, the printer subnet mask will be set to the APIPA address 255.255.0.0.

- 4 Press the Up/Down arrow keys to increment/decrement the numbers. Press the Left/Right arrow keys to move through the fields.



Refer to 'Data entry' on page 25.



Note that blank spaces will not be filled in.

Example: If the netmask is 120.000.120.120, then the data entry should be as follows:

ENTER NETMASK :	
120.000.120.120	
Only necessary in case of subnets!!	
X go back ✓ ok	↔select ↑↓change

Example: If the netmask is 120.0.120.120, then the data entry should be as follows:

ENTER NETMASK :	
120.	0.120.120
Only necessary in case of subnets!!	
X go back ✓ ok	↔select ↑↓change

- 5 Press the Confirm key to continue, or the Escape key to return to the previous step.

The 'Enter Router IP-address' screen is displayed:

ENTER ROUTER IP-ADDRESS :	
<div> <div>0</div> <div>0</div> <div>0</div> <div>0</div> </div>	e.g. 10.233. 92. 1
Only necessary in case of subnets!!	
<div> <div>X</div> <div>go back</div> <div>✓</div> <div>ok</div> <div>↔</div> <div>select</div> <div>↑</div> <div>change</div> <div>↓</div> </div>	

Blinking

If the Router IP-address has already been assigned, it will be shown on the display.

- 6 Press the Up/Down arrow keys to increment/decrement the numbers. Press the Left/Right arrow keys to move through the fields.



Refer to 'Data entry' on page 25.



Note that blank spaces will not be filled in.

Example: If the Router IP-address is 120.000.120.120, then the data entry should be as follows:

ENTER ROUTER IP-ADDRESS :	
<div>120.000.120.120</div>	
Only necessary in case of subnets!!	
<div> <div>X</div> <div>go back</div> <div>✓</div> <div>ok</div> <div>↔</div> <div>select</div> <div>↑</div> <div>change</div> <div>↓</div> </div>	

Example: If the Router IP-address is 120.0.120.120, then the data entry should be as follows:

ENTER ROUTER IP-ADDRESS :	
<div>120. 0.120.120</div>	
Only necessary in case of subnets!!	
<div> <div>X</div> <div>go back</div> <div>✓</div> <div>ok</div> <div>↔</div> <div>select</div> <div>↑</div> <div>change</div> <div>↓</div> </div>	

- 7 Press the Confirm key to continue, or the Escape key to return to the previous step.

The 'Enter Called AE-title' screen is displayed:

ENTER CALLED AE-TITLE :	
(<="Dicom language" for "Printer-name")	
<div> <div>-----</div> </div>	
Remark : max. 16 characters !	
<div> <div>X</div> <div>go back</div> <div>✓</div> <div>ok</div> <div>↔</div> <div>select</div> <div>↑</div> <div>change</div> <div>↓</div> </div>	

e.g. DS4500

- 8 Enter the Called AE-title by means of the arrow keys. Refer to [‘Data entry’](#) on page 25. Make sure not to enter more than 16 characters.
- 9 Press the Confirm key to continue, or the Escape key to return to the previous step.

The ‘Enter Hostname’ screen is displayed:

ENTER HOSTNAME :	

Remark : max. 16 characters !	
<input checked="" type="checkbox"/> go back	<input checked="" type="checkbox"/> ok ↔select ↑↓change

e.g. DS4500

- 10 Enter the Hostname by means of the arrow keys. Refer to [‘Data entry’](#) on page 25. Make sure not to enter more than 16 characters.
- 11 Press the Confirm key to continue, or the Escape key to return to the previous step.

The ‘Enter Domain Name’ screen is displayed:

ENTER DOMAIN NAME :	
-----→	
Remark : max. 255 characters !	
<input checked="" type="checkbox"/> go back	<input checked="" type="checkbox"/> ok ↔select ↑↓change

- 12 Enter the Domain Name by means of the arrow keys. Refer to [‘Data entry’](#) on page 25. Make sure not to enter more than 255 characters.
- 13 Press the Confirm key to continue, or the Escape key to return to the previous step.

A screen will appear summarizing the information you have entered:

FOLLOWING SETTINGS ARE ENTERED :	
Printer IP-address :	0.0.0.0
Netmask :	0.0.0.0
Router IP-address :	0.0.0.0
Called AE-title :	DS4500
Hostname :	DS4500

<input checked="" type="checkbox"/> Repeat step 2	<input checked="" type="checkbox"/> Go to step 3
Domain	: xxxxxxxx

e.g.
Prt IP-ad:123.123.123.123
Netmask:255.255.255.255
Router:123.123.123.123

- 14 Press the Confirm key to go to step 3 of the installation wizard or press the Escape key to repeat step 2.

◆ When you have pressed the Confirm key, the following screen will appear:

```
Second installation step is finished.
Proceed with the 3 step :
3. Modality-specific settings

Press / to continue
```

- 15 Press the Confirm key to continue.

Entering modality-specific settings

An instruction screen shows the information you need to complete this part of the installation:

```
For this step, you need following info
of all modalities using this printer:
DAILY USED MODALITY NAME
BRAND MODALITY TYPE
CALLING AE-TITLE ("modality name")
Ask the network-manager for this info.

X skip step 3      V continue
```

- 1 Press the Confirm key to continue or press the Escape key to skip this step.

◆ When you have pressed the Confirm key, the 'Enter daily modality name' screen will appear:

```
ENTER DAILY MODALITY NAME :
This name is used for easy recognition
of the images in the queue !

-----
remark_8_characters

X so back V ok      <-select  ^change
```

- 2 Enter the modality nickname by means of the arrow keys. Refer to ['Data entry'](#) on page 25. Make sure not to enter more than 16 characters.
- 3 Press the Confirm key to continue, or the Escape key to return to the previous step.

The 'Select modality brand name' screen is displayed:

```
SELECT THE BRAND OF THE MODALITY :
1 Other
2 Acuson
2 Philips
3 Trex
4 GE

X so back V ok      ^select
```

- 4 Press the Up/Down arrow keys to select the appropriate modality brand name.
- 5 Press the Confirm key to continue, or the Escape key to return to the previous step.

The 'Select modality type' screen will be displayed:

SELECT MODALITY TYPE		
1	MXVIEW	
2	MX8000	
X go back	✓ ok	↑↓select

- 6 Press the Up/Down arrow keys to select the appropriate modality type.
- 7 Press the Confirm key to continue, or the Escape key to return to the previous step.

The 'Enter Called AE-title' screen is displayed:

ENTER CALLED AE-TITLE :	

Remark : max. 16 characters !	
X go back	✓ ok ↔select ↑↓change

- 8 Enter the Called AE-title by means of the arrow keys. Refer to ['Data entry'](#) on page 25. Make sure not to enter more than 16 characters.
- 9 Press the Confirm key to continue, or the Escape key to return to the previous step.

The 'Select preferred film type for modality' screen will appear:

SELECT PREFERRED FILMTYPE FOR MODALITY	
<daily name or AE-title>	
Drystar DT 1 B	
Drystar DT 1 C	
X go back	✓ ok ↑↓select



You can find the film type on the film packaging. The label may show some additional characters after the film type, e.g. 'DRYSTAR DT 1 C'. Those characters are not relevant for the printer settings, and you can ignore them.

- 10 Press the Up/Down arrow keys to select the appropriate film type.
- 11 Press the Confirm key to continue, or the Escape key to return to the previous step.

A screen will appear summarizing the entered information:

```

FOLLOWING SETTINGS ARE ENTERED :
Daily mod. name      :Ctscanner0123456
Brand                :Philips
Modality type        :EasyVision
Calling AE-title     :AE_0123456
Pref. film type      :Drystar DT 1 B
X redo settings      ✓ accept settings
  
```

- 12 Press the Confirm key to accept the settings, or the Escape key to redo the settings for the current modality.

The following screen will appear, asking if you want to enter another modality:

```

DO YOU WISH TO ENTER ANOTHER MODALITY ?
yes
no
✓ ok                               ↑select
  
```

- 13 Press the Up/Down arrow keys to select your choice, followed by the Confirm key.
 - If you select 'yes', step 3 of the Setup wizard will be repeated for the next modality. Go back to ['Entering modality-specific settings'](#) on page 129.
 - If you select 'no', the third step of the installation is finished. The following screen will appear:

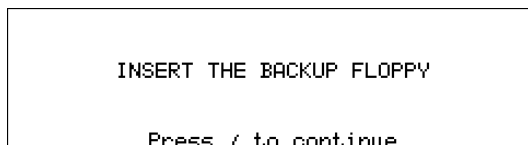
```

Third installation step is finished.
Proceed with step 4 :
4. Save configuration
Press / to accept the settings
Press X to redo the settings
  
```

- 14 Press the Confirm key to continue.

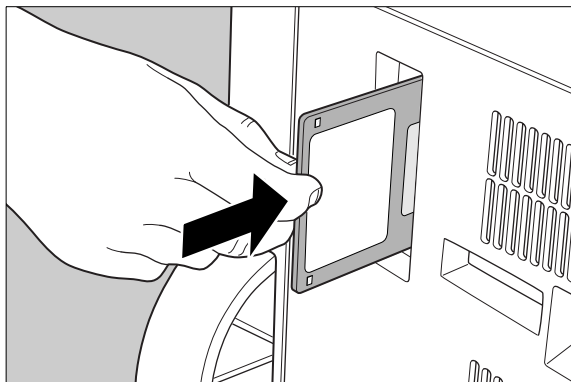
Saving the configuration

A screen will ask you to insert the back-up floppy:



1 Insert the floppy disk.

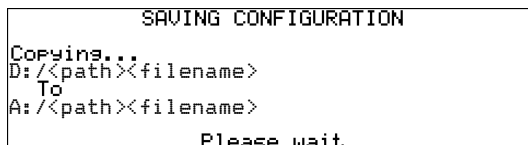
The drive is located at the rear of the printer.



For the back-up, a blank floppy disk is required (formatted, IBM-compatible, 2HD).

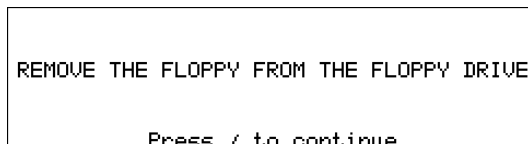
2 Press the Confirm key to continue.

The 'Saving configuration' screen is displayed.



The printer saves the configuration on the floppy disk.

When the writing process has finished, the following screen is displayed:



- 3 Remove the floppy disk and press the Confirm key.

The following screen is displayed:

LABEL FLOPPY WITH FOLLOWING DATA "Backup floppy" "Serial number : " "Date and time : 25-01-2005 16:21:34" Press / to continue

- 4 Press the Confirm key.

The installation is now finished.

The following screen is displayed:

New settings will be active after reset	Key-operator Installation
	<input checked="" type="checkbox"/> quit <input type="checkbox"/> reset

- 5 Press the Confirm key to reboot the imager. If you want to reboot later, press the Escape key. You will return to the 'Installation' screen.

Quality Control

In order to establish and maintain consistent image quality, a regular evaluation of the image quality is advised.

The Drystar 4500 contains an automatic QC feature that has been designed to comply with the grayscale reproduction constancy test, according to the international standard IEC 1223-2-4.

Local Regulations may require other procedures.

The Drystar 4500 QC procedure consists of two main steps:

- Before initial use, establishing a number of reference values that will be used for further follow-up and verifying initial image quality.
Refer to *'Establishing the reference values and verifying image quality'* on page 135.
- After establishing these values, performing regular daily, weekly and annual quality tests.
Refer to *'Performing quality control (QC) tests'* on page 142.

The results of these tests are recorded on Quality Control Charts.

The QC image (Refer to *'QC test image'* on page 139) has several additional fields where the QC data can be filled in. This image should be filed as part of the QC procedure.

For more information, please refer to *'Quality Control Charts'* on page 207.

Establishing the reference values and verifying image quality

After installation of a new Drystar 4500 and before initial use you must establish Quality Control aim values. These values will be used as the base line for comparison when daily Quality Control is done. These values should be determined again after major service, repair or software update.

The following Quality Control aim values must be determined:

- The daily operating density levels. Refer to *'Establishing the daily operating reference density levels'* on page 136.
- Drystar 4500 image geometry. Refer to *'Establishing the image geometry reference values'* on page 139.

Once Quality Control aim values are established you must evaluate the Spatial Resolution, the Artifact Levels and the Low Contrast Visibility to determine if the image quality is acceptable. Refer to *'Verifying Acceptable Spatial Resolution, Artifact Levels and Low Contrast Visibility'* on page 141.

The Quality Control aim values, the Spatial Resolution and Artifact Levels and the Image Geometry values are all recorded on the Quality Control charts. Refer to *'Quality Control Charts'* on page 207.

On these charts, the following test conditions are also recorded:

- The type and serial number of the Drystar 4500.
- The type and emulsion number of the film used to determine the reference values.
- The type of densitometer used.
- The time (day, month, year) that the values were established.



Before you can establish the daily operating levels, the Drystar 4500 must be switched on for at least 15 minutes and it must be calibrated as well.

Refer to *'Switching on the Drystar 4500'* on page 26 and *'Performing the calibration procedures'* on page 105.

Establishing the daily operating reference density levels

This procedure enables you to establish the base line values for:

- Low density
- Mid density
- High density



The densitometer of the Drystar 4500 is calibrated at installation. Authorized service personnel should recalibrate the densitometer annually or after major service or repair.

To establish the daily operating levels, proceed as follows:

- 1 Press the Key-operator key to enter the Key-operator mode.
- 2 Press the Down key seven times, followed by the Confirm key to select ‘QC’.

1 Show settings	Key-operator
2 Change settings	Main menu
3 Print image	
4 Save configuration	X quit
5 Restore configuration	Y ok
6 Calibration	↓select
7 Installation	
8 Quality Control	

The ‘Select input tray’ screen appears:

SELECT input tray	Key-operator
Upper input tray	Print image
Lower input tray	
	X quit
	Y ok
	↓select

- 3 Press the Up/Down arrow keys to select the proper input tray, followed by the Confirm key.

The Drystar 4500 will automatically print the QC Test image.

- 4 After the image is printed, the system will display the optical density values:

0.19		quality_ctrl_density_readings		1.92
0.36	Base + Fog: 0.00	high_density: 0.00		3.10
1.14	low_density: 0.00	Max. Density: 0.00		
	Mid density: 0.00	density_difference		
		(high_low) : 0.00		1.56
Default densitometer		Copy on control chart		
e.g. Macbeth TR924	←)			
	✓ ok			

The displayed values represent the following steps on the test film:

Operating Level		Value (Macbeth units) (according IEC 1223-2-4 or better)
Low density	the density value of the Low density step	0.4 ± 0.05
Mid density	the density value of the Mid density step	1.2 ± 0.15
High density	the density value of the High density step	2.0 ± 0.20



If the mid density value does not meet or exceeds the recommended values, the cause must be found and the problem solved before any further clinical films can be printed.

Refer to *'Maintaining image quality and resolving image quality problems'* on page 191 and *'Preventive maintenance schedule'* on page 168, or call your local Agfa service organization.

- 5 Record the density levels on the Drystar 4500 Chart 1 ('Determination of the operating levels'). Refer to *'Quality Control Charts'* on page 207.
- 6 Press the Confirm key to return to the main menu.
- 7 Repeat steps 1 through 6 once a day for five consecutive days, as indicated on the Drystar 4500 Chart 1.
- 8 Calculate the average value of the densities from the five images. These values represent operating levels or aim values, for each density.

- 9 Record the respective aim (average) values as the ‘Operating levels’ on the Drystar 4500 Charts 2a and 2b (‘daily Drystar 4500 control chart’). Refer to *‘Quality Control Charts’* on page 207.

The calculated ‘Operating levels’ should be as follows:

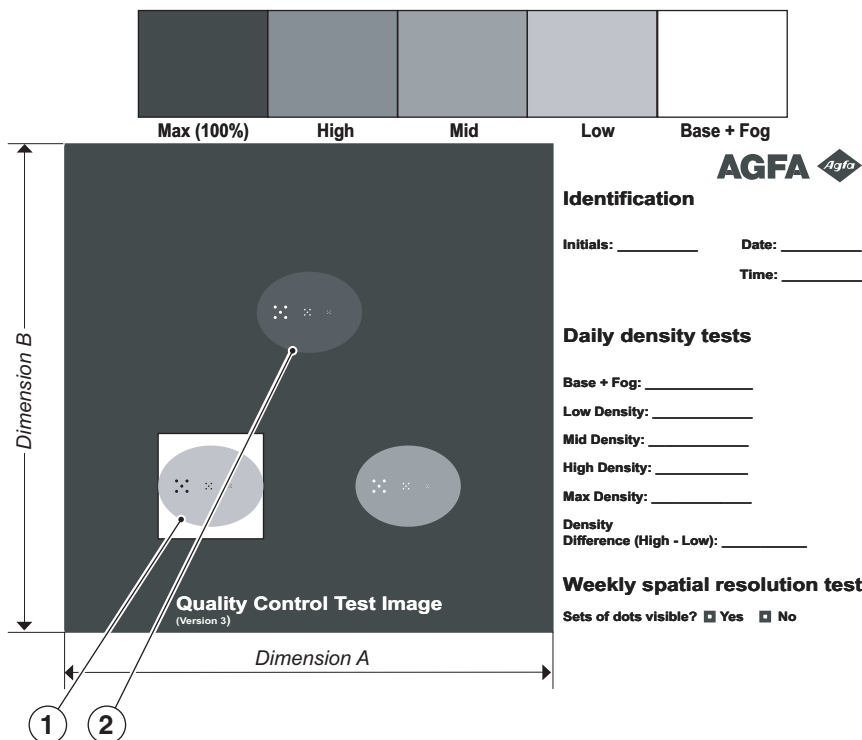
Operating Level	Value (Macbeth units) (according IEC 1223-2-4 or better)
Low density	0.4 ± 0.05
Mid density	1.2 ± 0.15
High density	2.0 ± 0.20

- 10 These charts will be used for the daily quality test. For more information, refer to *‘Performing the daily QC test’* on page 142.

Establishing the image geometry reference values

To establish the image geometry reference values, proceed as follows:

- 1 Print the QC test image or use the previously printed test image.
You should obtain an image looking like this (without the dimensions A and B):
QC test image



- 2 To determine the reference values for geometry, measure the distances A and B of the geometric square on the test image.



Make sure to measure distance A from the left edge of the left line to the right edge of the right line and distance B from the upper edge of the upper line to the lower edge of the lower line.

We strongly recommend using a 30 cm (12 inch) machinist scale with 0.5 mm divisions (1/64 inch).

- 3 Record these values as reference dimensions A ref and B ref on the Drystar 4500 Chart 4 ('Drystar 4500 Geometric Consistency Control Chart'). Refer to *'Quality Control Charts'* on page 207.

These charts will be used for the annual quality test. For more information, refer to *'Performing the Annual QC tests'* on page 145.

- 4 Save this film for future reference.

Verifying Acceptable Spatial Resolution, Artifact Levels and Low Contrast Visibility



Good viewing conditions are important for the correct interpretation of both diagnostic and test images. Make sure that the lightbox intensity (luminance) is between 2000 and 4000 cd/m² (4500 and 6500 °K). Use a magnifying glass and use shutters to collimate. Make sure the ambient light is low.

To verify acceptable spatial resolution, artifact levels and low contrast visibility, proceed as follows:

- 1 Print the QC Test image or use the previously printed QC Test image used to establish the daily operating density levels.
- 2 Visually check the QC test image for artifacts: no significant disturbing artifacts should be visible.
- 3 Check the spatial resolution in each of the three ovals. Within each oval there are three groups, each having five dots. All five dots of each group must be visible with a magnifying glass. The smallest cluster of 5 dots is only visible if the viewing conditions are good.
- 4 Check the Low Contrast Visibility at both the high (100 / 95%) and low end (0 / 5%) of the density scale. You should be able to see the circle in the square (refer to item 1 on the '[QC test image](#)' on page 139) and the upper circle (refer to item 2 on the '[QC test image](#)' on page 139).
- 5 Record these values at the top of the Drystar 4500 Chart 3 (Drystar 4500 Artifacts and Spatial Resolution Control Chart). Refer to '[Quality Control Charts](#)' on page 207.
- 6 These charts will be used for the weekly quality test. For more information, refer to '[Performing the Weekly QC tests](#)' on page 144.



In case of significant artifacts or insufficient spatial resolution, the cause must be found and the problem solved before any further clinical films can be printed.

Refer to '[Maintaining image quality and resolving image quality problems](#)' on page 191 and '[Preventive maintenance schedule](#)' on page 168, or call your local Agfa service organization.

Performing quality control (QC) tests

The following procedures must be performed daily, weekly or annually as indicated.

The reason for performing quality control tests is to determine if any significant image quality variation or deterioration has occurred which may require corrective action. Comparing the results of the tests with the reference values previously established does this.

This procedure allows the operator to take the necessary preventive actions before any image quality loss can take place.

Performing the daily QC test



This test must be performed every day before any clinical film can be processed.

- 1 Turn on the Drystar 4500 and wait at least for 15 minutes. Refer to [‘Switching on the Drystar 4500’](#) on page 26.
- 2 Press the Key-operator key to enter the Key-operator mode.
- 3 Press the Down key seven times, followed by the Confirm key to select ‘QC’.

1 Show settings	Key-operator
2 Change settings	Main menu
3 Print image	
4 Save configuration	X quit
5 Restore configuration	X ok
6 Calibration	↓ select
7 Installation	
8 Quality Control	

The ‘Select input tray’ screen appears:

SELECT input tray	Key-operator
Upper input tray	Print image
Lower input tray	
	X quit
	X ok
	↓ select

- 4 Press the Up/Down arrow keys to select the proper input tray, followed by the Confirm key.

The Drystar 4500 will automatically print the QC Test image.

- After the image is printed, the system will display the optical density values:

0.19		quality_ctrl_density_readings	
0.36	Base + Fog: 0.00	high_density: 0.00	1.92
1.14	low_density: 0.00	Max. Density: 0.00	3.10
	Mid density: 0.00	density_difference (high-low) : 0.00	1.56
Default densitometer e.g. Macbeth TR924	←)	Copy on control chart	
	✓ ok		

- Record the low, mid and high density values on the Drystar 4500 Charts 2A and 2B (Drystar 4500 Daily Density Control Chart). Also record the date and time of the test on the charts and on the QC test images. Refer to [‘Quality Control Charts’](#) on page 207.
- Press the Confirm key to return to the main menu.



In case the measure results are not within the aim values, the reason for the unacceptable density variations must be identified and resolved before any further clinical films can be processed. This may include repeating the film calibration procedure.

For possible causes of non-compliance and the respective actions, refer to [‘Maintaining image quality and resolving image quality problems’](#) on page 191 and [‘Preventive maintenance schedule’](#) on page 168.

Performing the Weekly QC tests

Spatial Resolution, Artifact Test and Low Contrast Visibility

To identify artifacts and verify spatial resolution you must perform the following test weekly or as needed for troubleshooting image quality problems.



Good viewing conditions are important for the correct interpretation of both diagnostic and test images. Make sure that the lightbox intensity (luminance) is between 2000 and 4000 cd/m² (4500 and 6500 °K). Use a magnifying glass and use shutters to collimate. Make sure the ambient light is low.

- 1 First, print out the QC test image. Refer to *'Performing the daily QC test'* on page 142.
- 2 Check the QC test image visually for artifacts: no significant disturbing artifacts should be visible.
- 3 Check the spatial resolution.
The test film also shows three squares which each contains an oval. These 3 ovals contain 3 groups, each having 5 dots. All five dots of each group must be visible with a magnifying glass. The smallest cluster of 5 dots is only visible if the viewing conditions are good.
- 4 Check the Low Contrast Visibility at both the high (100 / 95%) and low end (0 / 5%) of the density scale. You should be able to see the circle in the square (refer to item 1 on the *'QC test image'* on page 139) and the upper circle (refer to item 2 on the *'QC test image'* on page 139).
- 5 Record these values on the Drystar 4500 Chart 3 (Drystar 4500 Artifacts and Spatial Resolution Control Chart).



In case of significant artifacts, insufficient spatial resolution or failure of any other recommended QC tests, the cause of the problem must be identified, and corrective action must be taken before the Drystar 4500 can be used for any further clinical imaging.

Refer to *'Maintaining image quality and resolving image quality problems'* on page 191 and *'Preventive maintenance schedule'* on page 168 or call your local Agfa service organization for assistance.

Performing the Annual QC tests

Geometric Consistency Test

To be able to notice fluctuations in image size and aspect ratio, you must perform this procedure once a year.

- 1** First, perform the daily test.
- 2** Measure the distances A and B of the geometric square on the QC test image. Refer to *'Establishing the image geometry reference values'* on page 139.



Make sure to measure distance A from the left edge of the left line to the right edge of the right line and distance B from the upper edge of the upper line to the lower edge of the lower line.

We strongly recommend using a 30 cm (12 inch) machinist scale with 0.5 mm divisions (1/64 inch).

- 3** Record these values as measured distances A and B on Chart 4 ('Drystar 4500 Geometric Consistency Control Chart').
- 4** Compare the measured A and B dimensions with the reference dimension values, A_{ref} and B_{ref} on the Drystar 4500 Chart 4 ('Drystar 4500 Geometric Consistency Control Chart').
The differences between the measured dimensions of A and B and the reference values A_{ref} and B_{ref} should be less than or equal to 1.0%.
- 5** Check for image distortion.
- 6** Calculate the aspect ratio by dividing A by B.

The result must be 1 +/- 0.01



If the image size or distortion values exceeds the limits, contact Agfa service to resolve the problem.

Controlling the Drystar 4500 via the browser

This chapter will inform on how to control the functions of the Drystar 4500 via the browser on a remote PC.

- ☐ [Features](#)
- ☐ [Setup](#)
- ☐ [Setting up the connection](#)
- ☐ [Starting the remote session](#)

Features

- All functions that can be accessed via the local keypad and display can also be accessed via a remote PC via the network.
Brief: LOCAL corresponds with MAIN features.
- All functions that can be accessed via a remote connection are not necessarily available via the local keypad.
Brief: REMOTE corresponds with ALL features.
- This remote access allows controlling multiple printers from a networked central PC.
- The prerequisites for remote access are:
 - A PC (Windows 2000 is advised),
 - Browser software (preferably Microsoft Internet Explorer 6.0),
 - A network adapter,
 - A **cross-link Ethernet cable** (for a direct link between PC and Drystar 4500) or a **straight Ethernet cable** (for a connection via an existing network).
- Using the remote PC, you have access to five operating modes of the Drystar 4500: Operator mode, Key-operator mode, Service mode, Specialist mode, and Administrator (Security) mode.

Depending on the operating mode, you will need a password to have access:

Need password	Local	Remote
Operator	No	No
Key-operator	No	Yes
Service	Yes	Yes
Specialist	No access	Yes
Administrator	No access	Yes

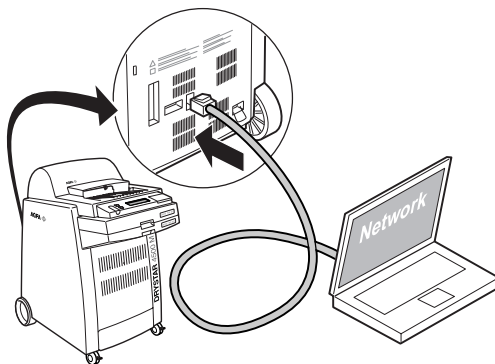
Setup

The Drystar 4500 and the PC with browser can be set up in two ways:

- using a crossed network cable, or
- using a straight network cable.

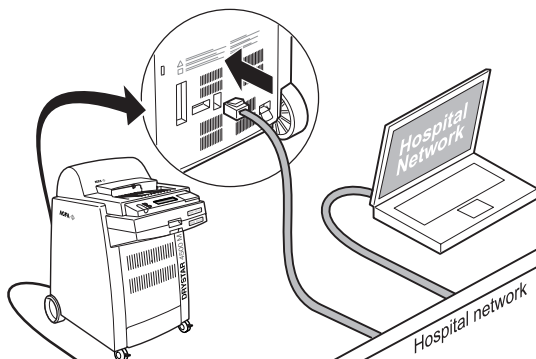
Configuration with crossed network cable

In this configuration, a crossed network UTP cable is used to connect the service PC directly to the printer.



Configuration with straight network cable

In this configuration, the PC is connected to the network with a straight network cable.



Setting up the connection

Setting up a direct link (configuration with crossed network cable)

To set up a direct link, you have to follow two procedures:

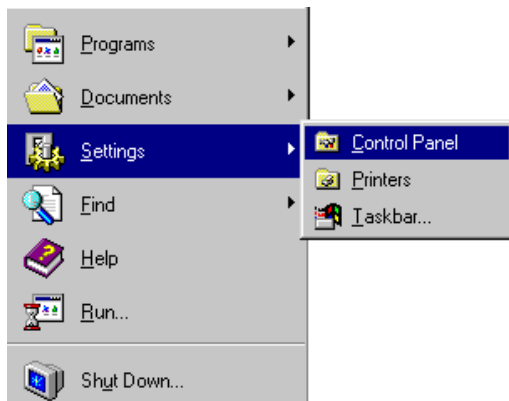
- Attribute a fixed IP address to the PC,
- Switch off all proxy setting in the browser.

When setting up a link, bare in mind the following important hints:

- Always make the physical connection first,
- Depending on the PC and/or Operating System, a reboot may be necessary in order to make the new configuration work.

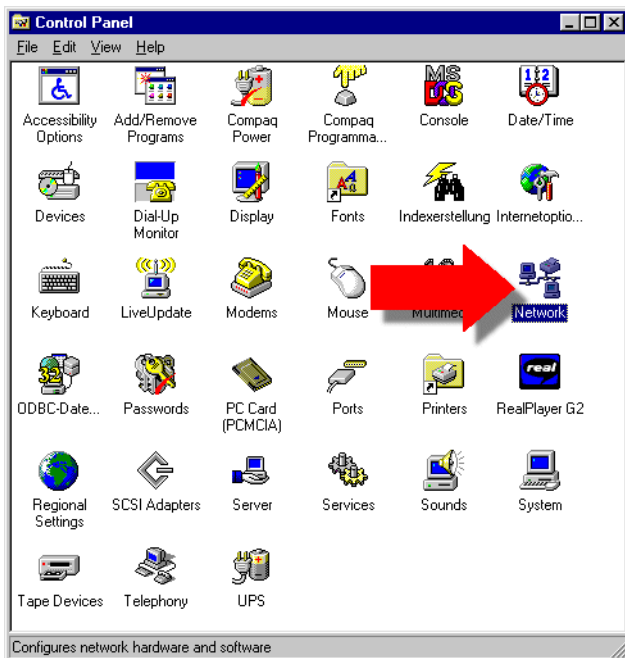
Attributing a fixed IP address to the PC

- 1 Go to Settings via the Start menu of Windows and click Control Panel.

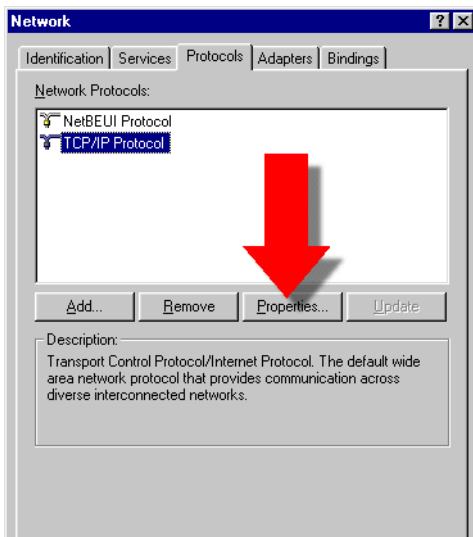


The Control Panel menu will appear.

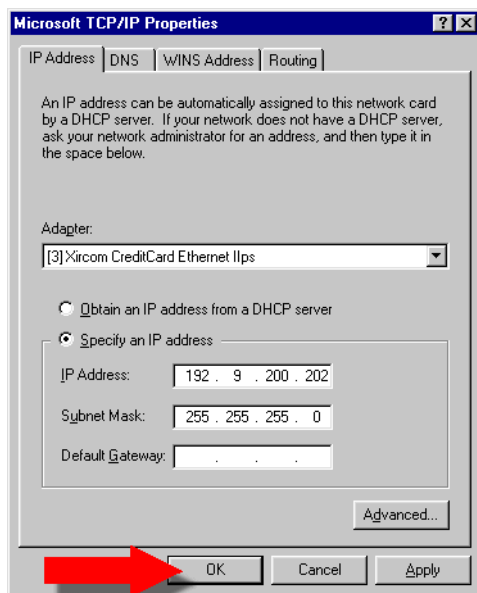
- 2 In the Control Panel menu, click Network.



- 3 In the Network window, select TCP/IP protocol and click properties.



4 Specify IP-address and subnetmask and click OK.

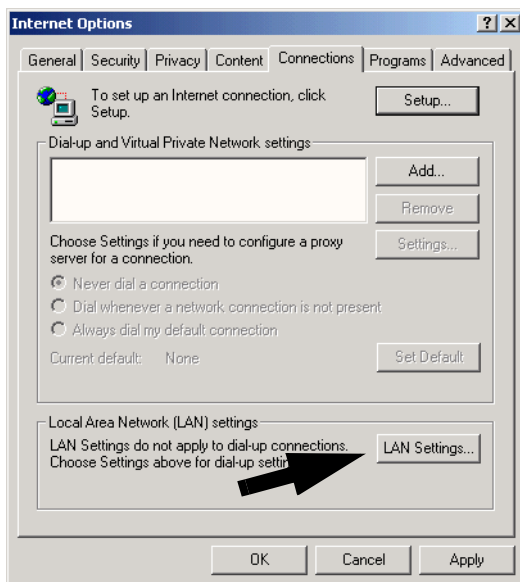


In case of APIPA assigned addresses, set the printer IP address to 169.245.10.10 and the printer subnet mask to 255.255.0.0.

Switching off the proxy settings of the browser

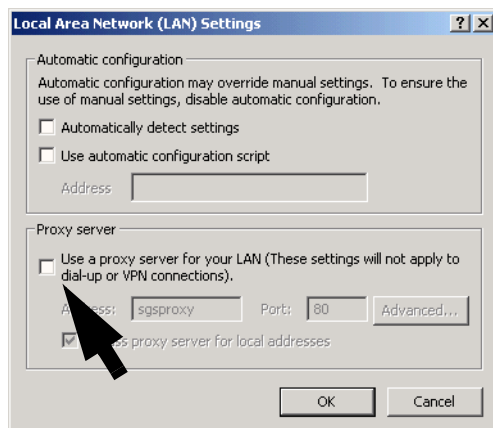
- 1 Open the browser.
- 2 In the Tools menu, click Internet options.
The Internet Options window will appear.

- 3 In the Internet Options window, go to the connection tab and click LAN settings.



The Local Area Network (LAN) Settings window will appear.

- 4 Switch off all proxy settings of the browser and click OK.



The PC is ready to make a connection. Refer to [‘Starting the remote session’](#) on page 155 for more information.

Setting up a link through a network (configuration with straight network cable)

Attribute a fixed and available IP-address to your PC. Refer to [‘Attributing a fixed IP address to the PC’](#) on page 150.

The PC is ready to make a connection. Refer to [‘Starting the remote session’](#) on page 155 for more information.

Starting the remote session

Starting the remote session



When starting the remote session, make sure the printer is in 'Ready' mode.

To start the remote session, enter the IP address in the Address bar of the browser.

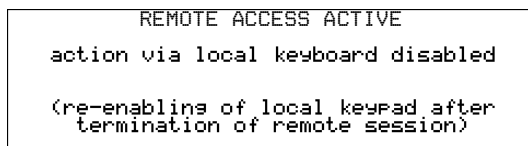
The Browser welcome page appears:



There are three access levels: key-operator, service engineer and specialist. Each level has its own user name and password.



A remote session disables the local keypad and display. While you work remotely, the following screen is displayed:



Entering the operator level

To enter the operator level, no password is required.

This level enables the operator to follow print jobs and perform common tasks.

Entering the key-operator level

To enter the key-operator level, enter the following user name and password:

- User name: Drystar
- Password: 4x00

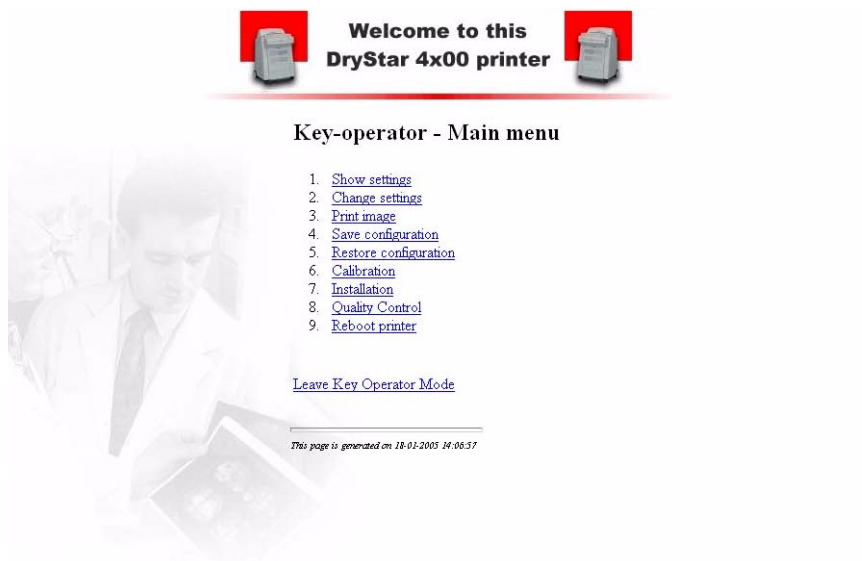
You now have access to the functions in the key-operator mode.



Only one session is active at one time on one printer.



Mostly, the menu structure and the browser screens are structured in the same way as the local display of the printer. Sometimes they differ slightly as in following example:



The screens are in english only.



The functionality of some features is extended via remote access. For example, you can also print TIFF-images which are “residing” on the Remote PC.



Do not use the Back and Forward buttons of your browser. Use the different links on the pages instead.

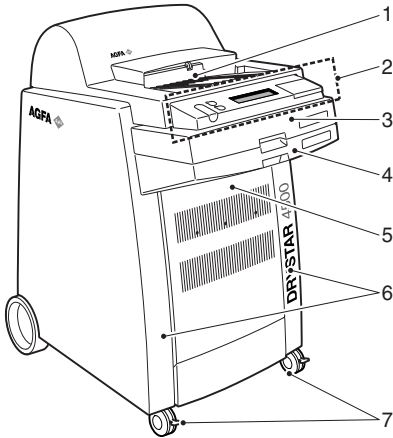
System description

In this informative chapter you will find mechanical and functional descriptions.

- ☐ [Main components](#)
- ☐ [Functional description](#)
- ☐ [Changing the film format of the lower tray](#)
- ☐ [Drystar 4500 network configuration](#)
- ☐ [Transport after installation](#)

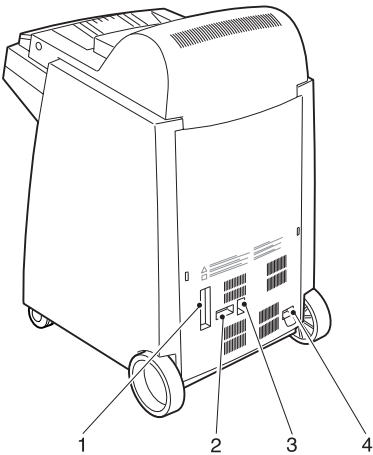
Main components

Front view

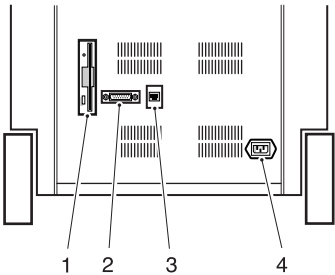


1	Film exit tray (Top cover)
2	User interface (refer to page 19)
3	Upper input tray
4	Lower input tray
5	Front cover
6	Side covers
7	Wheels with brakes

Rear view



1	Floppy disk drive
2	Input/output connector
3	Network connector
4	Power connection



Functional description

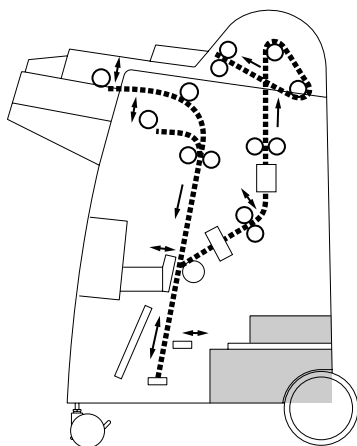
The Drystar 4500 consists of two functional blocks: a controller and a print engine.

The **controller** (gray section in the diagram below)

- captures the incoming analog or digital data via an input interface and stores the data on a hard disk,
- composes the different images, and
- generates the appropriate print engine control signals.

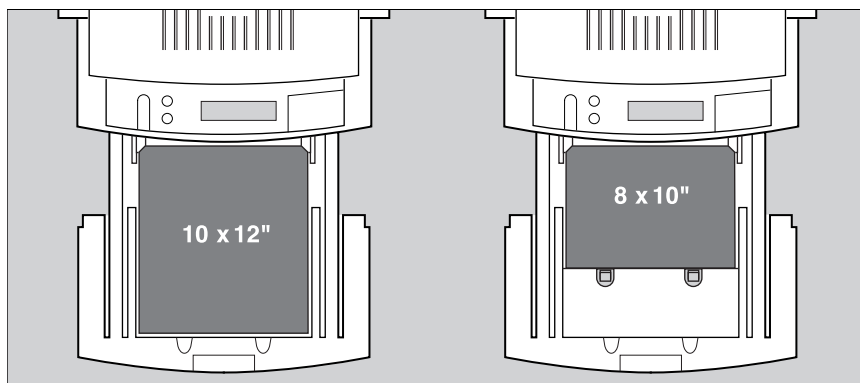
The **print engine** receives the image data from the controller, drives the film through the device and makes black & white prints.

The diagram below shows how the film is transported through the printer.



Changing the film format of the lower tray

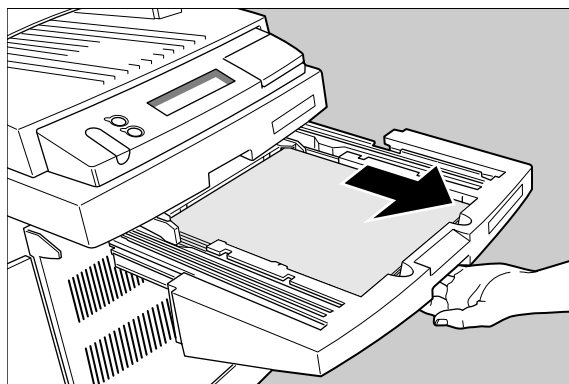
The key-operator can adjust the film size setting for the lower input tray (either 8x10" or 10x12").



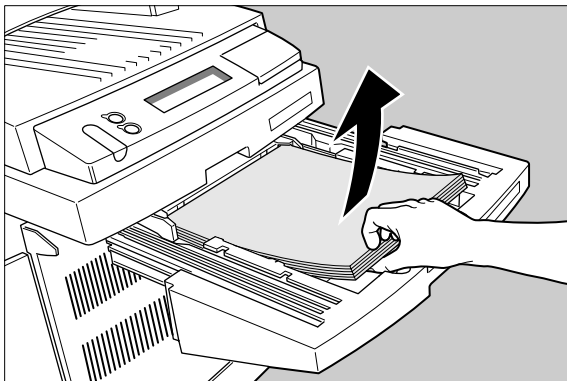
First, the key-operator has to perform a mechanical modification. After this modification, the 'film format' parameter has to be adjusted in the Change settings screen. Refer to ['Changing the film format of the lower tray'](#) on page 67.

Proceed as follows to perform the mechanical modification:

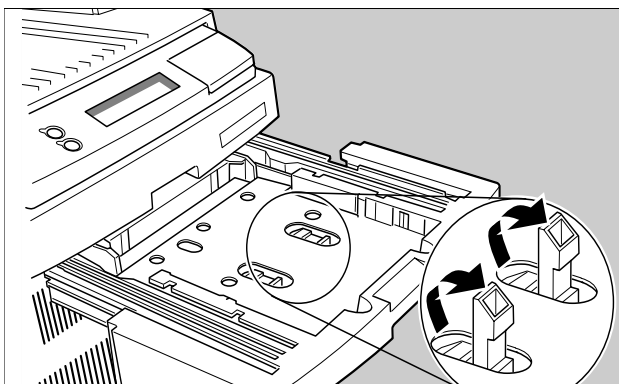
- 1 Open the lower input tray completely to make the tray accessible.



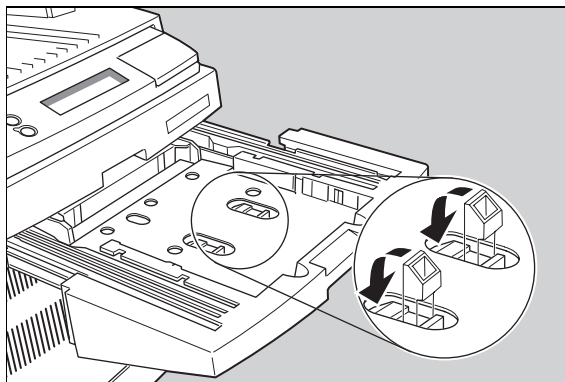
- 2** Remove any remaining film sheets.



- 3** To adjust the film format from 10x12" to 8x10", pull out the partition clips and put them upright.



- 4 To adjust the film format from 8x10" to 10x12", push the partition clips down.

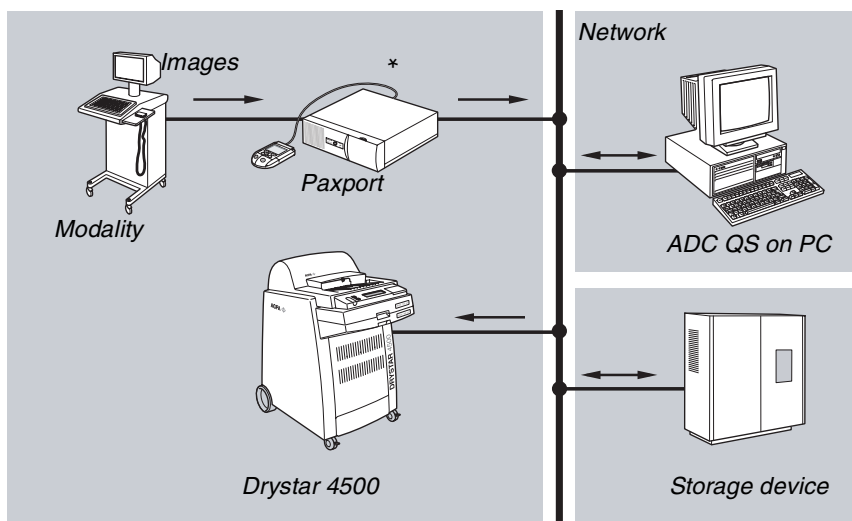


- 5 Adjust the 'film format' parameters in the Change setting screen. Refer to *'Changing the film format of the lower tray'* on page 67.

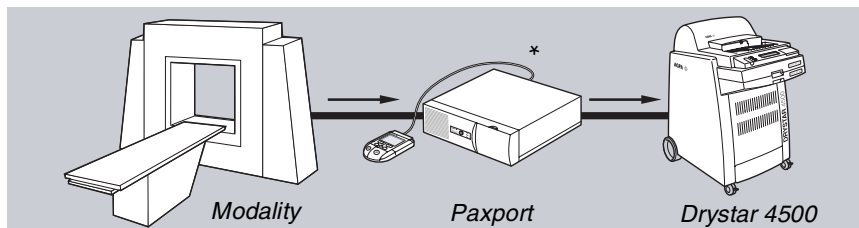
Drystar 4500 network configuration

In a network configuration, the Drystar 4500 is fully compatible with Agfa's diagnostic imaging systems, including the ADC Compact and ADC Quality System software, the Paxport and the entire line of Impax Review Systems, Storage Stations and Transmitting Stations.

The Drystar 4500 serves as a standard network printer. Acquisition, storage, transmission and printing are completely controlled by network modalities. As network protocols the standard Agfa protocol or the optional DICOM protocol can be used.



Example of the Drystar 4500 in a network configuration



Example of a Drystar 4500 in a point-to-point configuration

* Paxport is required if the modality is not a Dicom modality.

Transport after installation

The Drystar 4500 is equipped with wheels so that moving the printer over a short distance - if required - can be done in a convenient way.



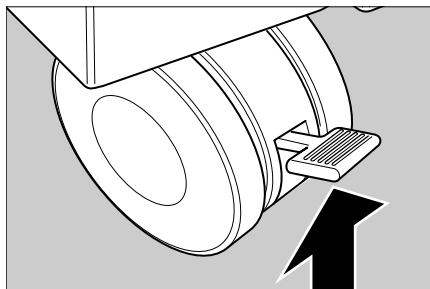
Refer to '[Safety precautions](#)' on page 9



Always keep in mind the following safety guidelines:

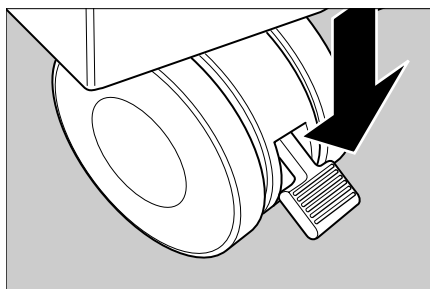
- During movement of the Drystar 4500 take care that stability is always ensured. Special attention should be paid to possible obstructions, and to uneven or slant surfaces.
- Never transport the Drystar 4500 with open covers.
- Make sure that both front wheel brakes are unlocked.

- 1 Unlock both wheel brakes on the right and left hand sides.



- 2 Move the Drystar 4500 to its destination.

- 3 Relock the wheels by pressing the brakes down.



Preventive maintenance

.....

This chapter guides the user through maintenance and cleaning tasks which require no special skills, tools nor training:

- ☐ [Preventive maintenance schedule](#)
- ☐ [Cleaning the exterior](#)
- ☐ [Cleaning the cooling air flow holes](#)

Preventive maintenance schedule

The Drystar 4500 is designed for trouble-free service. Maintenance and cleaning involve only some minor user tasks.

Interval	What to do?	Page
Ad hoc.	<i>'Cleaning the exterior'</i>	169
Each 6 months (or more if required).	<i>'Cleaning the cooling air flow holes'</i>	170
Ad hoc.	<i>'Print head cleaning'</i>	109
When image quality tends to degrade.	<i>'Print head profile calibration'</i>	111

Safety guidelines



To prevent damage to the printer while performing maintenance, observe the following safety precautions:

- Do not lubricate the printer.
- Do not attempt to disassemble the printer.
- Do not touch the resistor line of the print head.
- Always switch off the Drystar 4500 and disconnect the power cord from the outlet before carrying out any maintenance work inside the printer.



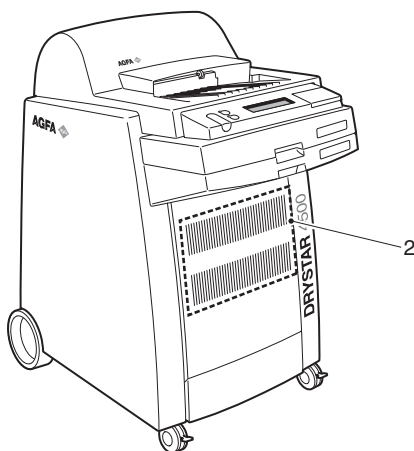
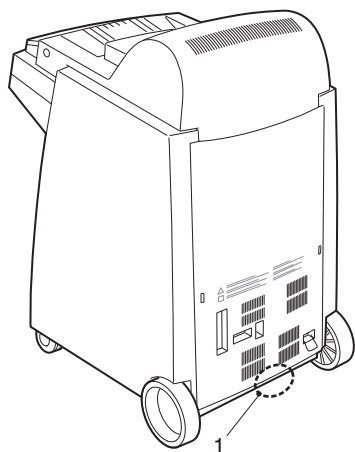
Film jam removal or cleaning the printer head can be done without switching the power off. Nevertheless, care should be taken and the *'Safety precautions'* on page 9 should be respected.

Cleaning the exterior

- 1 Switch off the Drystar 4500 by following the procedure as described in *'Switching off the Drystar 4500'* on page 28.
- 2 Remove the power plug from the socket.
- 3 Remove the network cable.
- 4 Wipe the exterior of the printer with a clean, soft, damp cloth.
Use a mild soap or detergent if required but never use an ammonia-based cleaner. Be careful not to get any liquid in the power cord port.
- 5 Plug in the printer and switch it on by following the procedure as described in *'Switching on the Drystar 4500'* on page 26.

Cleaning the cooling air flow holes

- 1 Switch off the Drystar 4500 by following the procedure as described in *'Switching off the Drystar 4500'* on page 28.
- 2 Remove the power plug from the socket.
- 3 Remove the network cable.
- 4 Push the release button of the backpanel. The button is situated in the zone represented by item 1 on the drawing below.
- 5 Remove the back panel.
- 6 With a vacuum cleaner, clean the cooling air flow holes on the front (item 2 on the drawing below) and especially the CPU/power supply area at the rear of the printer.



- 7 Re-install the backpanel.
- 8 Plug in the printer and switch it on by following the procedure as described in *'Switching on the Drystar 4500'* on page 26.

Troubleshooting

This chapter serves as a guide to identify and solve possible problems you may encounter.

- ☐ [Troubleshooting checklists](#)
- ☐ [The Drystar 4500 does not print.](#)
- ☐ [Clearing of film jams](#)
- ☐ [Start-up errors](#)
- ☐ [Maintaining image quality and resolving image quality problems](#)
- ☐ [Warning messages](#)

Troubleshooting checklists

General problems

The table below lists some general problems which can occur when working with the Drystar 4500.

- The Drystar 4500 does not print.

Action	Refer to	Page
Check the Drystar 4500	<i>'The Drystar 4500 does not print'</i>	174
Remove a jammed film	<i>'Film input tray feed jams'</i>	178
	<i>'Film transport jams (clearing from the front)'</i>	181
	<i>'Film transport jams (clearing from the top)'</i>	182
	<i>'Consumables wrongly inserted'</i>	186
	<i>'Unauthorized opening of the printer'</i>	188
Resolve error messages	<i>'Checking error messages'</i>	174
Handle floppy disk error	<i>'Checking floppy disk error messages'</i>	176

- The quality of the printed images is bad (printing remains possible).

Action	Refer to	Page
Resolve film quality problems	<i>'Maintaining image quality and resolving image quality problems'</i>	191
	<i>'White dots or lines appear in the transport direction'</i>	193
	<i>'Low frequency banding'</i>	193
	<i>'Scratches appear on film'</i>	193
Resolve warning messages	<i>'Warning messages'</i>	194



Have electrical or mechanical defects repaired by skilled personnel only!

Checking the status indicator LED

The LED on the front panel indicates the Drystar 4500 operating status. Use the following table to determine the status of your printer.

Color	Light	Status	Receive jobs?	Printing OK?	Action
Green	Constant	Ready (standby)	Yes	Yes	Proceed.
	Blinking	Start-up sequence	No	No	Wait.
		Receiving jobs	Yes	Yes	
		Calculating	Yes	Yes	
		Printing	Yes	Yes	
		Calibrating	Yes	No	
		Installation	No	No	Proceed with the activity.
		Key-operator	Yes/No	Yes/No	
Red	Blinking	Service mode	No	No	
		Upper/Lower Input tray empty	Yes	Yes/No	Refer to <i>'Loading films'</i> on page 38.
		Film jam	Yes	No	Refer to <i>'Clearing of film jams'</i> on page 177.
		Warning	Yes	Yes	Refer to <i>'Warning messages'</i> on page 194.
	Constant	Error status	No	No	Refer to <i>'Checking error messages'</i> on page 174.

The Drystar 4500 does not print

Proceed as follows when the Drystar 4500 does not print:

Checking error messages

- 1 Check the display messages.

If the Drystar 4500 is not printing your job, you should check the front panel display to see if the Drystar 4500 is indicating an error status.

The operator is notified of the situation by means of an Error screen and a beep:

NEW PRINTER DEFECT		ERROR LEVEL	Blinking
CALL SERVICE			
ERROR CODE		✓ok	
ERROR CODE		↔scroll	
ERROR CODE			
ERROR CODE			

- 2 Acknowledge the new error condition.

A new Ready screen will appear, holding all error messages. With the Up and Down keys you can scroll through the error messages:

ALL PRINTER DEFECTS		ERROR LEVEL	Blinking
CALL SERVICE			
ERROR CODE		↑↓scroll	
ERROR CODE			
ERROR CODE			
ERROR CODE			

- 3 Call the service operator.



An error message is different from a warning message. A warning means that an event occurred which might result in a decreased image quality. Printing is still possible, which is not the case when an error message appears.

Checking the connections

- 1 If no error message is displayed, check the power and network connections.



Regularly check all electrical connections. When interference occurs with other devices, consult your local service organization.



Call your local service organization in case cables are disconnected. The user is not allowed to add or remove any connectors.

- 2 If the connections are OK, reset the Drystar 4500.
- 3 If the Drystar 4500 still does not print, consult your local service organization.

Checking the print queue

If no error message is displayed, you should check the print queue:

```
<Modality name> 10:21:34 PRINTING
                  film 0 of 0
<Modality name> 10:21:34 CALCULATING
<Modality name> 11:35:27 WAITING
<Modality name> 11:54:02 WAITING
```

For each line of the queue, the status can be:

- printing,
- calculating,
- waiting,
- warning,
- error.

A warning or error status indicates that there is a print queue problem.

Refer to '[Managing the print queue](#)' on page 31.

Checking floppy disk error messages

If the Drystar 4500 is not printing your job, you should check the front panel display to see if the Drystar 4500 is indicating an error status.

A floppy disk error can occur when the inserted floppy disk is full, write protected or when no floppy disk is inserted.

- 1 Correct the error following the error message on the screen:

FLOPPY HANDLING ERROR	ERROR	Blinking
<error message>	✓ ok	

After you have corrected the action the screen will disappear.

Clearing of film jams

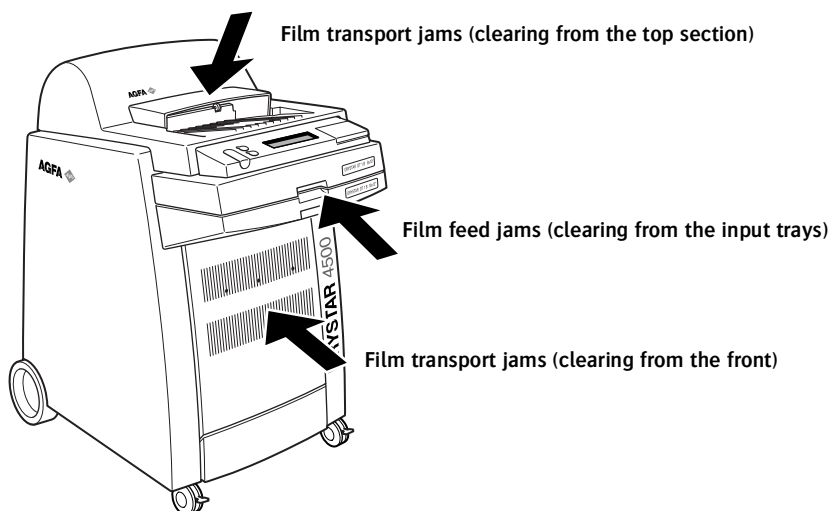
A film jam can be situated either:

- In the input tray section. Refer to *'Film input tray feed jams'* on page 178.
- In the front section. Refer to *'Film transport jams (clearing from the front)'* on page 181.
- In the top section. Refer to *'Film transport jams (clearing from the top)'* on page 182.

Jams can be caused by:

- Loading consumables in a wrong way, e.g. loading film upside down. Refer to *'Consumables wrongly inserted'* on page 186.
- Opening the printer cover(s) or input tray(s) while a film is actually being printed. Refer to *'Unauthorized opening of the printer'* on page 188.

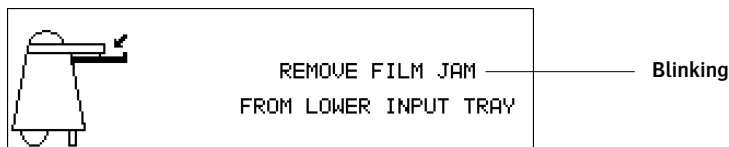
Overview of sections:



A pictogram on the display depicts where the film jam is situated in the printer.

Film input tray feed jams

The following screen indicates that a jam occurred in the feed section of the input tray(s):



A message will inform you if either the **upper** or **lower** input tray is jammed.

To remove a jammed film in the input tray (e.g. lower input tray):

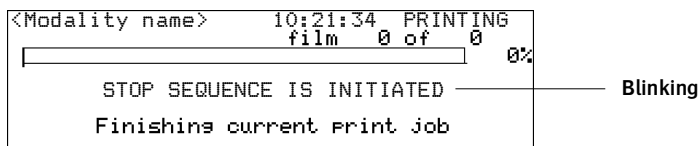


In the procedure, we will assume that the lower input tray is to be cleared. The procedure for the upper input tray is identical.

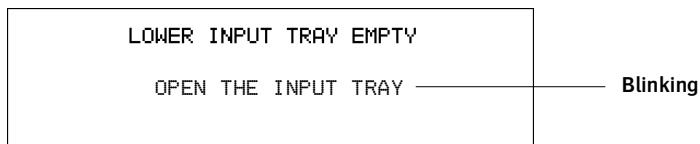
- 1 Press the **Stop button** to initiate the stop sequence.



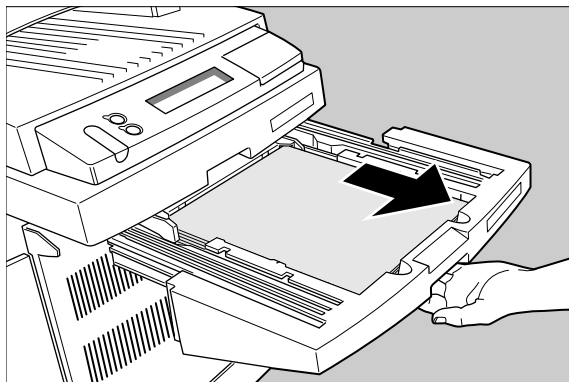
- 2 Wait while the printer is finishing printing any current jobs.



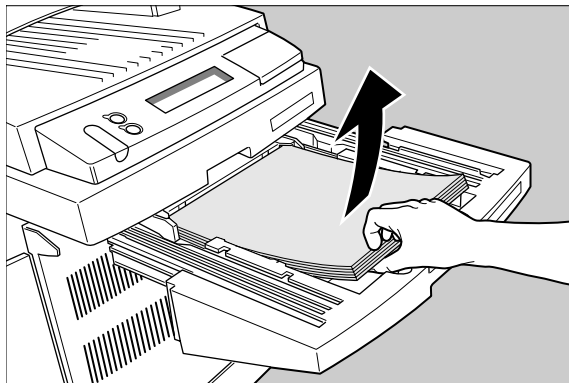
The printer is ready when the following message appears:



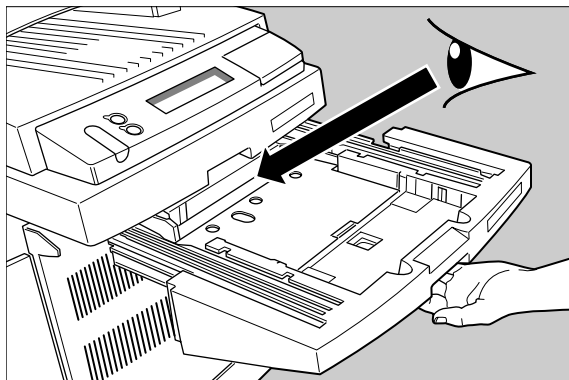
- 3** Open the film input tray.



- 4** To get a clear view, remove any remaining film sheets.



5 Check the film feed section of the film tray.



If a film is jammed, gently remove the sheet. Reposition the film stack in the film tray, making sure that all the sheets are kept correctly in place under the film retainers (refer to *'Loading films'* on page 38).



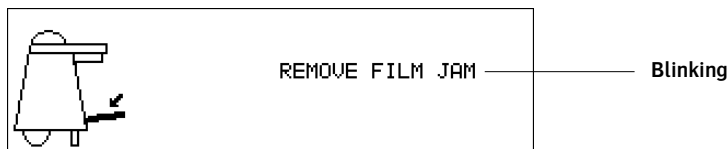
Never use force to clear the jammed film. If it is not possible to gently remove the jammed film, call your local service organization.



Never reuse a jammed film. This may cause damage to the thermal head and/or dust problems.

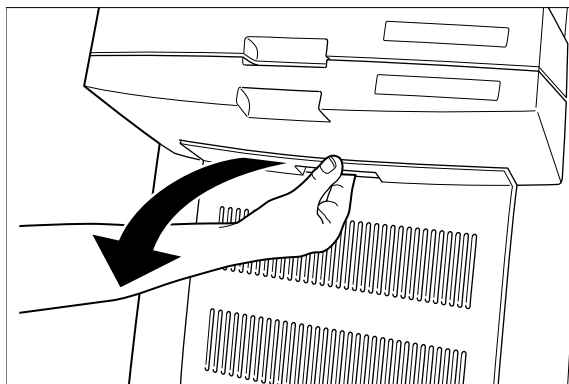
Film transport jams (clearing from the front)

The following screen indicates that a jam occurred in the front section of the film transport system.

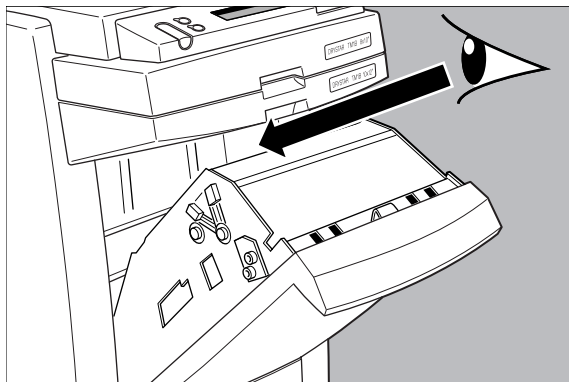


To remove a jammed film in the front section of the transport system :

- 1** Pull the front door open.



- 2** Check the interior of the printer for jammed sheets.



- 3 If a film is jammed, remove it carefully.



Never use force to clear the jammed film. If it is not possible to gently remove the jammed film, call your local service organization.



NEVER reuse a film that you got back from a jamming situation, it may damage the print unit.

- 4 Close the front door.

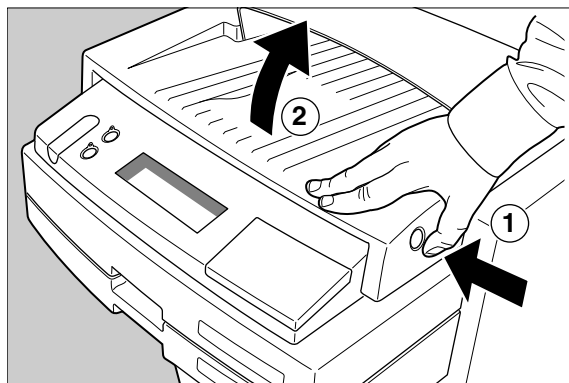
Film transport jams (clearing from the top)

The following screen indicates that a jam occurred in the upper section of the film transport system.

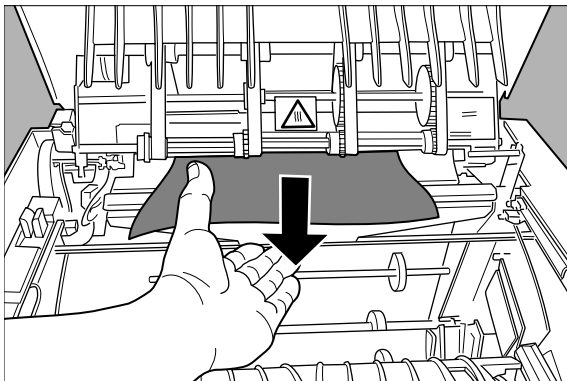


To remove a jammed film in the top section:

- 1 Press the button [1] on the right hand side to open [2] the top cover.



2 Check the transport rollers for jammed sheets.

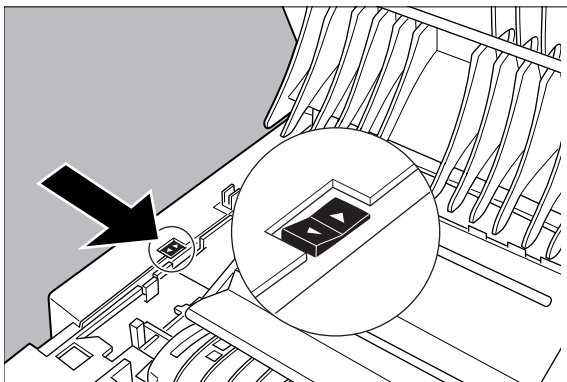


If a film is jammed, gently remove the sheet.



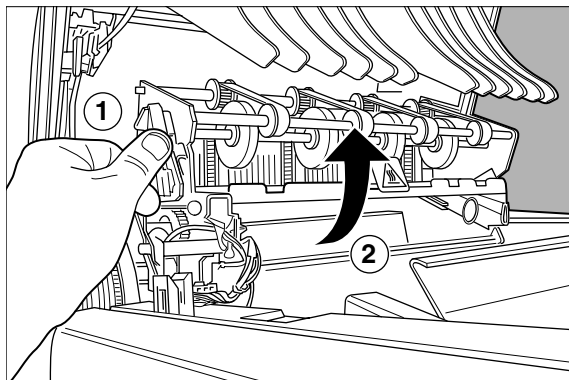
The de-curl unit can be hot. If the Drystar 4500 has been operational, wait several minutes before continuing, to allow the de-curl unit to cool.

3 If required, press the transport buttons to help clearing the jammed film.



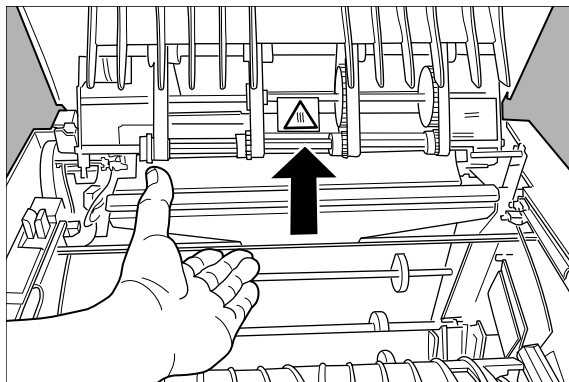
Never use force to clear the jammed film. If it is not possible to gently remove the jammed film by pressing the transport buttons, proceed with the procedure as follows:

- 4 With your thumb, use the lever [1] to tip over [2] the roller unit.



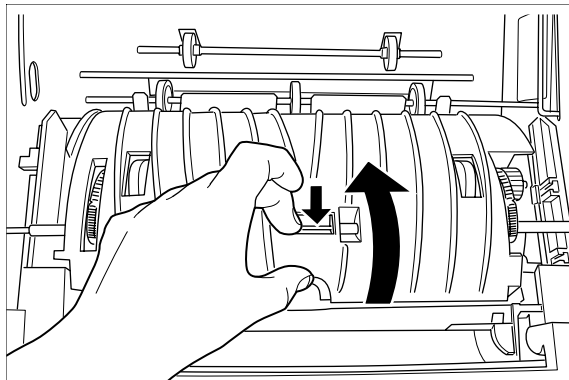
- 5 If it is not yet possible to remove the sheet from this position, try lifting the iron bar.

Lift the iron bar in its middle section, under the grip, and push it up.



- 6 If you can still not see the jammed film at this moment, the film jam might be situated under the bowed cover.

To lift the bowed cover, push the red button in the middle section and tilt the bowed cover backwards.



- 7 Check the section under the cover for film jams. If required, gently remove the jammed film.
- 8 If the film jam has been cleared, close the printer. You can resume work.



If the jam is not cleared at this moment, call you local service organization.



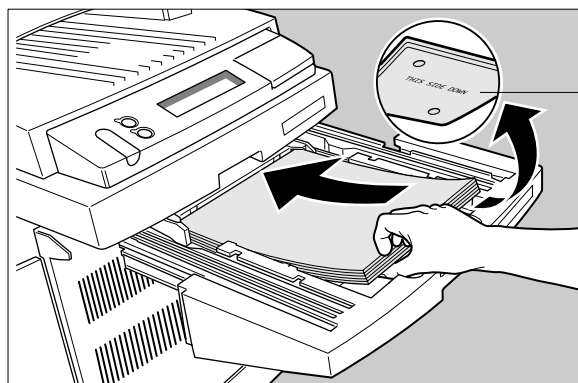
NEVER reuse a film that you got back from a jamming situation, it may damage the print unit.

Consumables wrongly inserted

If film is loaded upside down in a film tray, a jam occurs and the user is asked to reload the film.

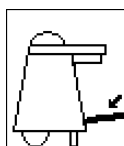


Make sure that the perforated protective sheet delivered with the film pack is facing downwards:



'This side down'

The following screen indicates that a jam of the protective sheet occurred in the front section of the film transport system.



REMOVE FILM JAM

Blinking

- 1 Remove the jammed protective sheet.

Refer to ['Film transport jams \(clearing from the front\)'](#) on page 181.

After removal of the jammed film, the user is informed that the film pack has been loaded upside down.

FILM INSERTED UPSIDE DOWN
IN LOWER input tray

Remove and re-insert film package
(including protective sheet)
Read the pictograms inside the tray

Blinking

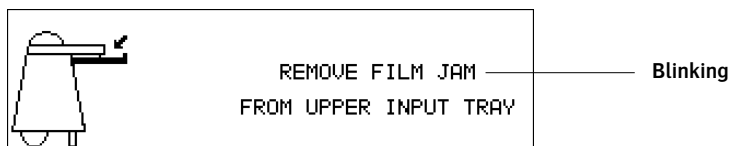
A message will inform you if either the **upper** or **lower** input tray is to be reloaded.

- 2** Open the film tray and remove the film pack.
- 3** Load the film pack once again, carefully following the appropriate procedure.
Refer to *'Loading films'* on page 38.

Unauthorized opening of the printer

A jam can be caused by opening the printer covers or one of the input trays while a film is actually being printed.

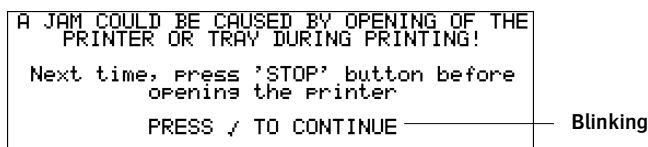
The screen below indicates where the jam has occurred. In this example the screen indicates a jam in the upper input tray.



- 1 Remove the jammed sheet.

Refer to [‘Clearing of film jams’](#) on page 177.

After removal of the jammed film, the user is informed that he caused the film jam by opening the printer without first pressing the **Stop** button.



- 2 Make sure to follow carefully the procedures as described in this manual before attempting to open the printer.

Refer to [‘Switching off the Drystar 4500’](#) on page 28.

Refer to [‘Loading films’](#) on page 38.

Start-up errors

Error messages while the printer starts up

The table below lists the possible error messages which can appear on the display of the control panel while the printer starts up.

Error message	Cause of error
Error display failure (Firmware)	<i>'Key selftest failed'</i>
Error system failure	<i>'Key selftest failed due to no communication between Key and CPU'</i>
Error self test failure (Firmware)	<i>'Software selftest failed'</i>



Contact your local service organization in case the selftest fails.



Error messages can also appear when the printer has already started up. Refer to *'Checking error messages'* on page 174.

After starting up the Drystar 4500, the printer performs a selftest. A progress indicator will show the proceeding of this self test. During the self test, a number of messages can appear, meaning that the selftest has failed.

Key selftest failed

In case the Key selftest has failed, following message appears:

```

      ERROR
Display failure

```

Key selftest failed due to no communication between Key and CPU

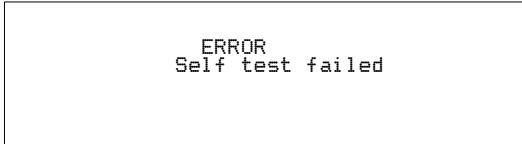
In case the Key selftest has failed due to no communication between Key and CPU, following message appears:



```
      ERROR  
System failure
```

Software selftest failed

In case the software selftest has failed, following message appears:



```
      ERROR  
Self test failed
```

Maintaining image quality and resolving image quality problems

Calibration is necessary to maintain optimal Image Quality. This is required in the following situations:

- Before initial use of a film,
- When loading new films into the input trays,
- After a certain number of copies have been printed.

Overview of calibration functions

Three calibration functions are provided for the Drystar 4500.

	Calibration	Purpose	When?
1	<i>'Film calibration'</i>	<ul style="list-style-type: none"> • To measure and set the system density of the printer. • To measure and set the film sensitometry values. 	<ul style="list-style-type: none"> • Automatic after 'n' film packs printed. • After an explicit action of the operator.
2	<i>'Print head cleaning'</i>	To reduce irregularities on the film.	<ul style="list-style-type: none"> • When image quality problems occur.
3	<i>'Print head profile calibration'</i>	To reduce vertical density irregularities on the film.	<ul style="list-style-type: none"> • After an explicit action of the operator.



Some calibration functions are interrelated, so do not perform any of the above calibration functions as an isolated procedure.



Before performing a calibration, read the general guidelines as described in *'Understanding the calibration policy'* on page 192.

Understanding the calibration policy

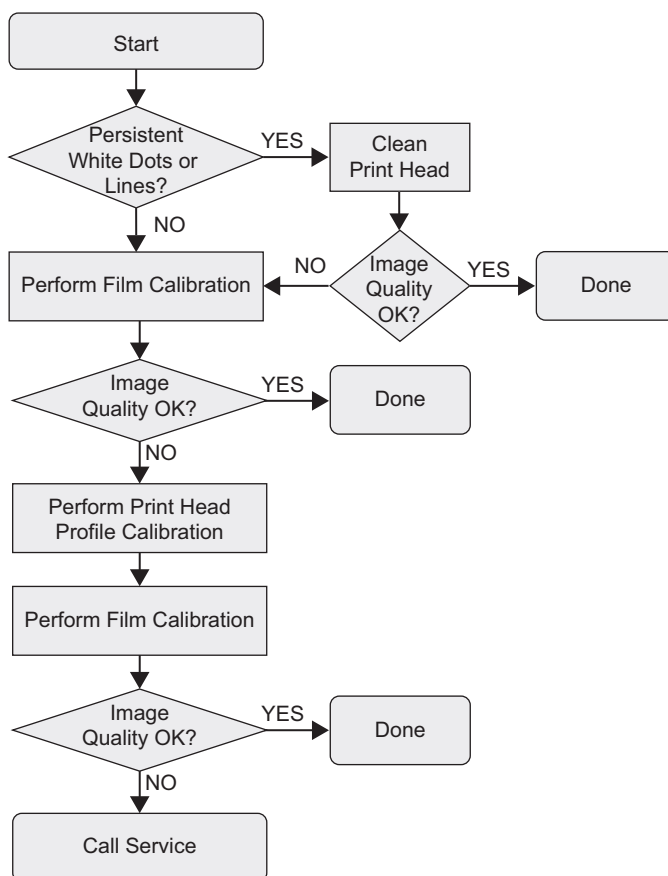
You should regularly perform a film calibration to assure that the image quality remains optimal.

Film calibration can be initiated in 2 ways:

- Automatically, i.e. after loading every 'n' film packs (automatic initiation),
- Manually, i.e. you decide for yourself when to perform a film calibration, e.g. daily, once a week, or only when the image quality tends to degrade.

For setting automatic or manual film calibration initiation, refer to [‘Changing the image quality settings’](#) on page 84.

The following flowchart will assist you in determining the correct operation in order to maintain the optimal image quality from your printer:



White dots or lines appear in the transport direction

If fine white dots and one or more fine white lines appear in the transport direction (mostly due to dust infiltration), try the following remedies:

- 1 Clean the print head resistor line.



Use a lint free cloth slightly moistened with Isopropyl alcohol or Ethanol to remove dirt from the resistor line.

Refer to *'Print head cleaning'* on page 109.

- 2 Print a few test sheets using the 'Print test image' function.

Refer to *'Printing test images from the hard disk'* on page 94.

If the white lines are still visible, contact your local service organization.

Low frequency banding

If you notice density non uniformity (low frequency banding) in the thermal head direction, perform print head profile calibration.

Refer to *'Print head profile calibration'* on page 111.

Scratches appear on film

If you notice scratches on the film in the print head direction, this may be due to the fact that a film sheet has been placed upside-down in the input tray.



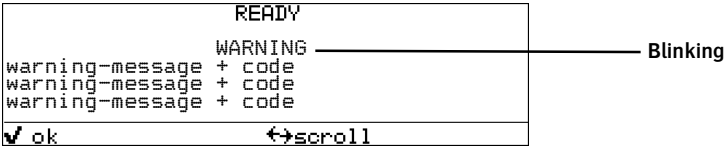
Verify the correct position of the films in the input trays.

Refer to *'Place the new film pack in the film tray.'* on page 42.

Warning messages

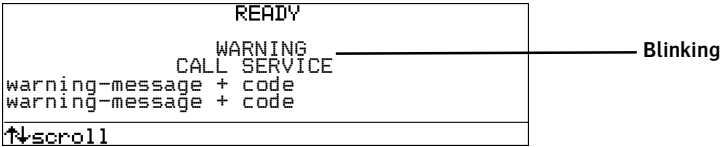
This section will inform you what to do when warning messages appear. A warning message is displayed when an event has occurred that might decrease image quality.

The Warning screen is displayed:



- 1 Press the Confirm key to acknowledge the new warning condition.

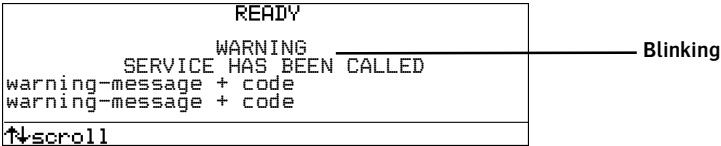
The Ready screen will appear, holding all warning conditions:



- 2 Contact your local service organization.




In case the following screen appears, service was called automatically via the Agfa Service Host:




Equipment information sheet

Specifications

Product description	
Type of product	Printer
Commercial name	Drystar 4500
Original seller/manufacturer	Agfa-Gevaert N.V.
Labelling	
TÜV-, cULus-Certification Mark, CE-marking	
CCC Mark	
A#Sharp Mark	
Dimensions	
Dimensions (approx. values in cm)	<ul style="list-style-type: none"> • Unpacked: width 55, length 72, height 92 • Packed: width 70, length 88, height 130
Weight	<ul style="list-style-type: none"> • Unpacked: approx. 95 kg • Packed: approx. 125 kg
Hard disk capacity	> 4 GByte
RAM memory	128 Mb
Floppy disk container	Four 2HD 1.44 Mbyte floppy disks
Electrical connection	
Operating voltage	100-120 V; 220-240 V AC
Mains fuse protection	
220-240 V operation	16/15 A slow blow, max.
100-120 V operation	16/15 A slow blow, max.
Mains frequency	50/60 Hz

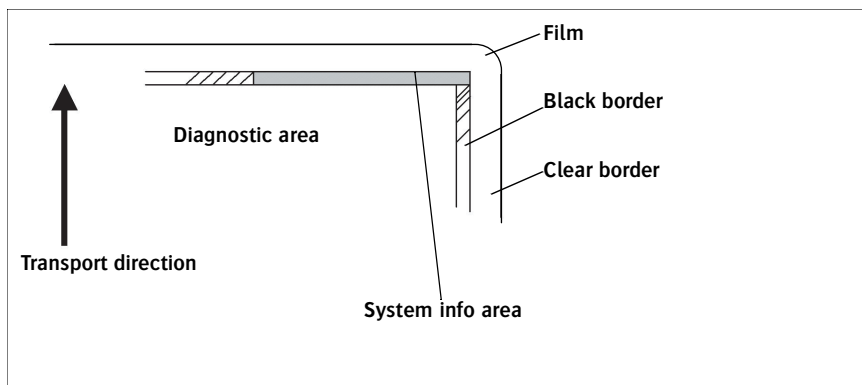
Network connectivity	
Ethernet / connectors	RJ45 twisted pair for 10/100Base-TX; Serial RS232 connection
Network protocols (TCP/IP services)	FTP, Telnet, HTTP, SNMP, SMTP, LPD, Helios
Image formats	DICOM (Default) TIFF
Postscript	Optional
Power consumption - heat dissipation	
During operation	350 W
In standby	140 W
Protection against	
Electrical shocks	Class 1 (grounded)
Ingress of water	IPXØ
Environmental conditions (operation)	
Room temperature	Between +15°C and +30°C
Relative humidity	Between 20% and 75% <u>Note:</u> Films may not become wet!
Atmospheric pressure	70 kPa - 106 kPa
Environmental storage conditions	
	<i>Climate conditions for storage are in accordance with EN60721-3-1-class 1K4.</i>
Room temperature	Between -25°C and 55°C (storage)
Relative humidity	Between 10% and 100%
Absolute humidity	Between 0.1 g/m ³ and 35 g/m ³
Rate of change of temperature	1°C/min
Atmospheric pressure	70 kPa - 106 kPa

Environmental transport conditions	
	<i>Climate conditions for transport are in accordance with EN60721-3-2-class 2K4.</i>
Temperature	Between -40°C and 70°C (transport)
Relative humidity not combined with rapid temperature changes	95% at +45°C
Noise emission (method of measurement in accordance with DIN 45635 part 19)	
During operation	Max. 55 dBA
In standby	Max. 45 dBA
Consumables	
Drystar DT 1B and Drystar DT 1C	8x10" and 10x12" film sizes
Print technology	
Direct thermal printing	
Reliability	
Estimated product life (if regularly serviced and maintained according to Agfa instructions)	> 5 years and > 150,000 films
Service interventions	Max. 2 interventions / 3 years
Earthquake (standard)	Meets the CA requirements

Imaging Array - Diagnostic area				
Film size 8x10"	8" dimensions in pixels	8" dimensions in mm	10" dimensions in pixels	10" dimensions in mm
Diagnostic area	3728	186,4	4672	233,6
Film size 10x12"	10" dimensions in pixels	10" dimensions in mm	12" dimensions in pixels	12" dimensions in mm
Diagnostic area	4672	233,6	5760	288,0

Viewing the System info area on a film

On the top right corner of each film, a “System info” area will be printed. This info can only be read using a magnifying glass.



The System info area contains info about:

- Printer: (serial number, densitometer info, film counts, software version, etc.),
- Controller (image source, date, time, etc.).

For more detailed information, refer to the Drystar 4500 Service documentation.

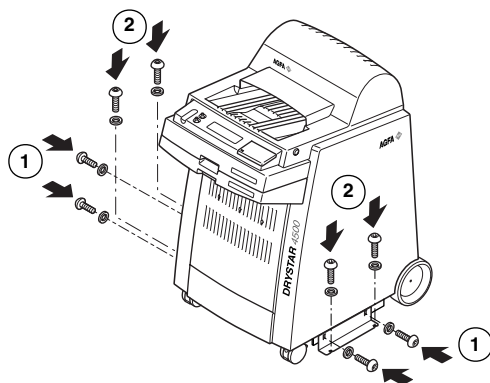
Options and accessories

Accessory

Mobile installation kit

The default installation kit allows you to use the Drystar 4500 in a van, or to use it in unstable environment.

Safe transportation is ensured by two fixation bars that lock the Drystar 4500 to its location (see illustration below). The fixation bars are included in the default installation kit.



For more information, refer to the “Unscrew the fixations” instructions of the Drystar 4500 Plug & Play Installation manual (document 2805F or 2805G).

Option

Postscript connectivity.

A Postscript software module can be installed as an option. No hardware modifications are required prior to the installation of the Postscript module.

Connectivity

Connectivity with Agfa equipment

- Connected via VIPS or CR QS
 - ADC Compact
 - ADC Compact Plus
 - ADC Solo
 - CR 25.0
 - CR 75.0
- ADR Thorax
- Impax
- MG3000
- Paxport
- MULTIFLEX

Connectivity with non-Agfa equipment

Drystar 4500 is a Dicom printer and can therefore be connected to all modalities supporting Dicom. Although, to ensure optimal operation and image quality, Agfa has made the effort to test and release the Drystar 4500 with most of the modalities on the market. For the complete list or if you want to check on a specific modality, contact your Agfa representative.

**Drystar media
density response data**

Drystar DT 1 B

dens.	MacBeth TR-924	Gretag D200-2	X-rite 301	X-rite 310	X-rite 331	X-rite 341
0%	0,24	0,19	0,21	0,26	0,20	0,21
10%	0,53	0,49	0,51	0,55	0,51	0,51
20%	0,81	0,77	0,79	0,84	0,80	0,80
30%	1,10	1,05	1,08	1,14	1,08	1,08
40%	1,38	1,32	1,35	1,42	1,36	1,36
50%	1,67	1,61	1,63	1,72	1,65	1,65
60%	1,96	1,90	1,92	2,02	1,94	1,94
70%	2,24	2,17	2,19	2,31	2,23	2,23
80%	2,53	2,44	2,47	2,60	2,50	2,50
90%	2,81	2,71	2,75	2,90	2,78	2,78
100%	3,10	2,99	3,03	3,21	3,07	3,07

Drystar DT 1 C New

dens.	MacBeth TR-924	Gretag D200-2	X-rite 301	X-rite 310	X-rite 331	X-rite 341
0%	0,11	0,11	0,09	0,09	0,09	0,09
10%	0,39	0,39	0,39	0,39	0,38	0,38
20%	0,68	0,69	0,68	0,68	0,68	0,68
30%	0,96	0,97	0,96	0,98	0,96	0,97
40%	1,25	1,25	1,24	1,27	1,24	1,24
50%	1,53	1,53	1,52	1,56	1,52	1,52
60%	1,81	1,80	1,79	1,84	1,81	1,80
70%	2,10	2,08	2,08	2,14	2,09	2,09
80%	2,38	2,36	2,36	2,43	2,38	2,38
90%	2,67	2,64	2,64	2,73	2,67	2,66
100%	2,95	2,92	2,92	3,02	2,95	2,95

Quality Control Charts

Chart 1

Drystar 4500: Determination of Operating Levels

Imager Type: _____ Serial #: _____ Date _____

Film Type: _____ Emulsion #: _____

Densitometer _____ Internal: _____ (default selection)

Step 1: Print QC Test images on five consecutive days. Record the optical densities measurements in the tables below. After five days, average the values to determine the operating (aim) levels for each of the parameters.

	Day 1	Day 2	Day 3	Day 4	Day 5
Month					
Day					
Initials					

Low Density					
Average of 5 Values = operating (aim) level "Low Density"					

Mid Density					
Average of 5 Values = operating (aim) level "Mid Density"					

High Density					
Average of 5 Values = operating (aim) level "High Density"					

Step 2: Copy the operating (aim) levels to Charts 2A/B ('Daily Density Control')

Chart 2A

Drystar 4500 Daily Density Control Chart

Imager Type: _____ Serial #: _____ Film Type: _____ Emul #: _____

Densitometer Internal: _____ (default selection)

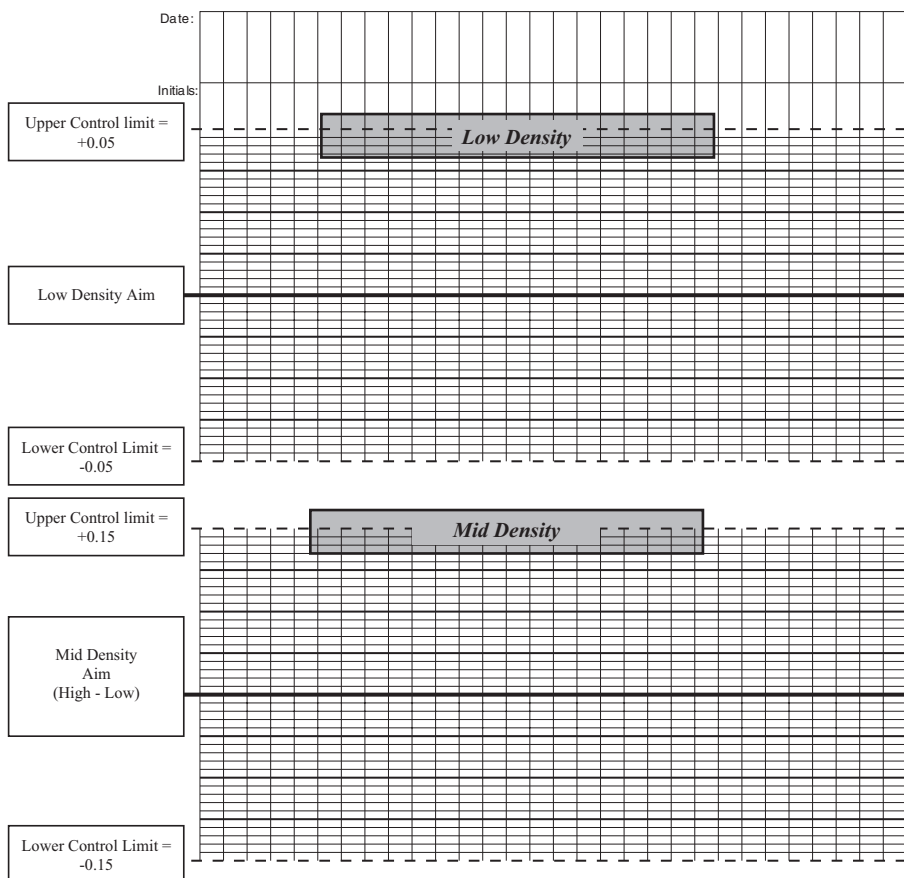


Chart 2B

Drystar 4500 Daily Density
Control Chart

Imager Type: _____ Serial #: _____ Film Type: _____ Emul #: _____
Densitometer Internal: _____ (default selection)

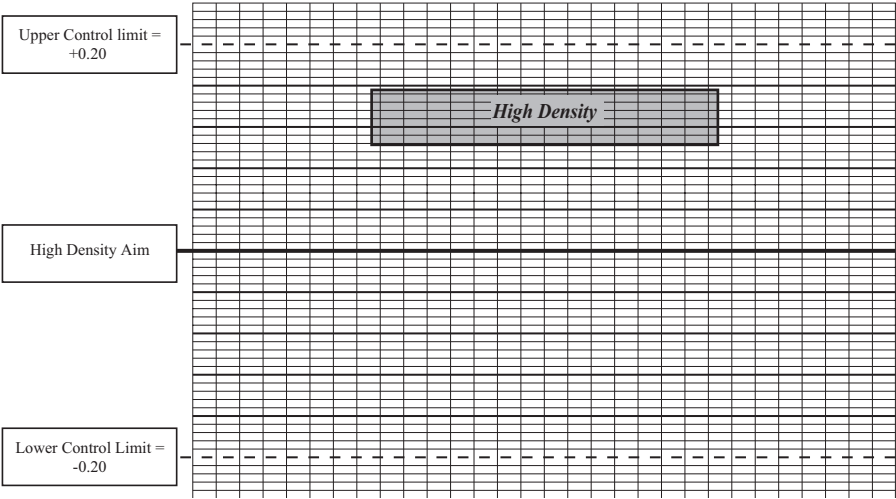


Chart 3

Drystar 4500 Artifacts and Spatial Resolution
Control Chart

Test Frequency: Weekly Drystar 4500 Serial # _____

Initial Reference Test Date	
Initial Reference Artifacts	
Initial Reference Dot Visibility	
Initial Reference Low Contrast	

Month					
Day					
Artifacts					
Visibility of all Dots					
Low Contrast Visibility					

Month					
Day					
Artifacts					
Visibility of all Dots					
Low Contrast Visibility					

Month					
Day					
Artifacts					
Visibility of all Dots					
Low Contrast Visibility					

Month					
Day					
Artifacts					
Visibility of all Dots					
Low Contrast Visibility					

Month					
Day					
Artifacts					
Visibility of all Dots					
Low Contrast Visibility					

Chart 4

Drystar 4500 Geometric Consistency
Control Chart

Test Frequency: Annually or as required Drystar 4500 Serial # _____

Reference Dimensions		Measured Dimensions		Consistency		Aspect Ratio	
Date:		Date:					
A _{ref}		A:		A/A _{ref}		A/B	
B _{ref}		B:		B/B _{ref}			

Reference Dimensions		Measured Dimensions		Consistency		Aspect Ratio	
Date:		Date:					
A _{ref}		A:		A/A _{ref}		A/B	
B _{ref}		B:		B/B _{ref}			

Appendix

D

Index

Index

A

- Attributing fixed IP address to remote PC 150
- Audio signals
 - meaning 21

B

- Back-up of settings
 - how to make a back-up of the printer settings on a diskette? 99
- Beeps. See Audio signals
- Browser mode
 - configuration with crossed network cable 149
 - configuration with straight network cable 149
 - features 148
 - how to control the Drystar 4500 via the browser 147
 - how to enter the key-operator level? 156
 - how to set up a direct link 150
 - how to set up a link through a network 154
 - how to start a remote session? .. 155
 - setup 149

C

- Calibration
 - film calibration 106
 - overview of calibration functions 191
 - print head profile calibration 111
- CCC. See Labels
- CE. See Labels
- Cleaning the cooling air flow holes 170
- Cleaning the exterior 169
- Configuration
 - network 165

Copies

- how to change the number of copies? 97

cULus. See Labels

Customization functions

- general procedure 57
- overview 56

D

- Default densitometer 86
- Deletion of print jobs 34
- Dimensions DS5500 196
- Diskette
 - printing files from a floppy disk 96
- Display
 - messages 23
- Domain name
 - how to change the Domain name? 73

E

- Electrical connection 196
- Emergency key 22
- Emergency priority
 - how to assign emergency priority? 33
- Environmental conditions
 - operation 197
 - storage 197
 - transport 198
- Error messages 189
 - checking error messages 174
 - while the printer starts up 189

F

Film

- how to change the film format? 67
- how to change the film type? 62
- how to change the film view? 64
- how to clear film jams? 177
- how to load new film? 38
- how to maintain image quality and resolve image quality problems? 191
- Film calibration 84

Film format	
how to change the film format of the lower tray?	162
Floppy disk	
back-up procedure	132
restore procedure	102
upgrading the software	113

G

General image quality settings	
activating the film calibration	84
selecting the default densitometer	86

H

Hostname	
how to change the hostname?	72

I

Icons	22
Image quality	
how to control the image quality on a regular basis?	134
how to maintain image quality and resolve image quality problems?	191
how to perform the quality control procedures?	142
how to select another lookup table?	87
how to set the default values?	135
low frequency banding.....	193
performing the Annual QC tests.....	145
performing the daily QC test	142
performing the Weekly QC tests.....	144
preventive maintenance schedule	168
scratches appear on film.....	193
white dots or lines.....	193
Image quality settings.....	84

Image quality settings for a modality	
changing the interpolation.....	89
changing the maximum density....	91
selecting a lookup table	87
Indicator LEDs	
meaning of the LED signals	173
Installation	
using the installation wizard	119
Interpolation	
how to change the interpolation?	89
IP-address	
how to attribute fixed IP-address to remote PC	150
how to change the Printer IP-address?.....	74
how to change the Router IP-address?.....	78

J

Jams (how to solve?)	177
----------------------------	-----

K

Key-operator menu	24
Keypad	
functions of the keys.....	21
general description	21
keys.....	21
Keys	
confirm key	22
emergency key	22
erase key	22
escape key	22
key-operator key	22
service key.....	22

L

Labels	
CCC	14
CE/TÜV/cULus	14
LEDs	
meaning of the LED signals	173
Loading films	
how to load new film?	38

Lookup table	
how to select another?.....	87

M

Maximum density	
how to change?.....	91
Modality	
how to add a modality?.....	81
how to remove a modality?.....	80

N

Netmask	
how to change the netmask?.....	76
Network connectivity.....	197

O

Operating.....	16
Operating modes	
Administrator mode.....	17
Key-operator mode.....	16
Operator mode.....	16
Service mode.....	16
Specialist mode.....	16
Operator main screen.....	24

P

Power consumption.....	197
Power/Reset button	
location.....	19
Preventive maintenance.....	168
Print head	
print head cleaning.....	109
print head profile calibration.....	111
Printer AE_title	
how to change the printer	
AE_title?.....	71
Printer information	
how to view printer information?...	49
Printing files	
from a floppy disk.....	96
from harddisk.....	94
Privacy and security.....	15

Proxy settings	
how to switch off proxy settings of	
browser.....	152

Q

Quality control.....	134
calculated operating	
levels.....	137, 138
how to perform the quality control	
procedures?.....	142
how to set the default values?....	135
performing the Annual QC	
tests.....	145
performing the daily QC test.....	142
performing the Weekly QC	
tests.....	144

R

Remote PC	
configuration with crossed network	
cable.....	149
configuration with straight network	
cable.....	149
Restoring settings	
how to restore settings from a	
diskette?.....	101

S

Safety	
compliance.....	13
precautions.....	9
safety guidelines.....	168
transport after installation.....	166
Selftest failure.....	189
Setting up a link through a network	
between PC and Drystar 4500.....	154
Setting up direct link between PC and	
Drystar 4500.....	150
Shut down procedure.....	28
Specialist.....	16
Start-up errors.....	189
Start-up procedure.....	26
Status indicator	
location.....	19

Switching off standard procedure	28
Switching off proxy settings of the browser	152

T

Transport after installation	11
Troubleshooting checklists	172
TÜV. See Labels	

U

Upgrading the software	113
User interface	19
control panel	21
display	23
keypad	21

W

Warning messages	189, 194
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